A Staff Survey of Computer Use in Toronto's Senior and Secondary Schools

No. 192

Research Services
Toronto Board of Education

91-02545/

ISSN 0316-8786
ISBN 0-88881-207-8

A Staff Survey of Computer Use in Toronto's Senior and Secondary Schools

June 1989

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Chapter 1

Introduction

Objective

In 1985, the Toronto Board of Education set forth policy recommendations regarding the use of computers in a report, entitled Learning with Computers: The Next Few Years. In part, it was recommended that all grade 7 and 8 students acquire an initial degree of computer literacy and, that beginning in 1987-88, the major focus would be on the integration of the basic concepts and skills with the existing curriculum. It was suggested that, initially, Ontario Approved Eligible Microcomputers (OAEM) would be provided in a computer laboratory in each school, and by 1987-88 three microcomputers would be installed in each classroom to enhance integration of computer learning across the curriculum. It was also recommended that opportunities be made available in secondary schools for all students to utilize the computer as a creative learning tool, and for interested students to engage in intensive study in the field of computer technology, applications and programming.

In order to fulfil the recommendations of Learning with Computers, the Computer Co-ordinating Unit (CCU) was formed to co-ordinate Board support and funding for schools. This study, which was requested by CCU, is an attempt to take a "snapshot" of computer use in Toronto's schools with regard to the recommendations cited above.

Four target areas and seven specific issues will be explored in this survey. The four target areas are:

1. computer use in grades 7 and 8;

2. computer use in secondary schools, mainly Computer Studies programs;

3. the role of site administrators; and

4. opinions of supervisory officers, principals and consultative staff who registered in the "Computers in Education" staff development program.

The seven issues are:

- Hardware
- Software
- Technical support and Maintenance
- Computer use
- Site administration
- Staff development
- Factors which restrict computer use in classrooms

The chart below illustrates the seven issues that will be addressed under the four areas.

4 Areas / 7 Issues	Grade 7 & 8	Computer Studies	Site Administration	"Computers in Ed." Registrants
Hardware	o	o		
Software	o	o		
Technical support & Maintenance	o	o		
Computer use	o			
Site administration			o	
Staff development	o			o
Restrictive factors	o	o		

In this report, the four target areas will be dealt with separately in subsequent chapters, and the final chapter will highlight the important findings of the whole survey.

It should, however, be noted that owing to the time restriction, this survey will only cover the opinions of

pertinent school staffs - namely principals, teachers, and site administrators - and those supervisory officers who registered in "Computers in Education". The opinions of the Board's service delivery groups such as CCU, Instructional Media Services, and Maintenance department will not be included in the report.[1]

Methodology

In order to examine the computer use situation at grade 7 and 8 levels, a sample of 14 elementary schools was selected. All these 14 schools received CCU-funded microcomputers between 1986 and 1987. One hundred and twenty-eight teachers from these schools were identified and became part of the study group. These teachers either had atterded inservice training, received CCU-funded microcomputers for their classrooms, or use CCU-funded computers in a school lab. Each teacher was sent a questionnaire relating to hardware, software, technical support, and staff development. (See Appendix 1.) They were also interviewed about specific uses of computers and curriculum integration at a subsequent interview. (See Appendix 2.) The principals of the 14 schools were also sent a questionniare and were subsequently interviewed on their general perception of computer use at their schools. (See Appendices 3-4.)

Twenty-two secondary schools were also selected for the survey. These schools received CCU-funded "Grant Eligible Microcomputer System" (GEMS) computers. The principals were requested to respond to six open-ended questions concerning the overall use of computers at their schools. (See Appendix 5.) Computer Studies teachers at these 22 secondary schools were sent a survey form with specific questions regarding hardware, software, and technical support. (See Appendix 6.) Because of the time restriction, no interviews were conducted at the secondary school level.

---

1. Instead CCU will prepare a document in response to this report.

Site administrators at the 14 elementary and the 22 secondary schools were asked to respond to separate questionnaires regarding their technical support needs and the amount of time they spend carrying out their responsibilities. (See Appendices 7-8.)

Finally, 257 Board staff members who had registered in the "Computers in Education" staff development courses (offered by the Board between 1986 and 1988) were sent a short questionnaire, covering such areas as attendance, computer literacy and further requirements regarding computer skills. (See Appendix 9.)

Chapter 2

Computer Use in Grades 7 & 8

2.1 Responses from Grade 7 & 8 Teachers

One hundred and twenty-eight grade 7 and 8 teachers - who either had attended in-service training, received CCU-funded microcomputers for their classrooms, or use CCU-funded computers in a school lab - were sent a questionnaire. (See Appendix 1.) Eighty-five (66%) returned the questionnaire, and 122 were interviewed. The findings from both the returned questionnaires and the interviews will be reported under the following headings.

- Hardware
- Software
- Technical Support and Maintenance
- Staff Development Programs
- Computer Applications
- Teachers' Comments and Suggestions

Hardware

The Computer Co-ordinating Unit (CCU) has provided funding for three models of computers: ICON, IBM EDNET, and Apple IIGS.[2] Table 2.1 shows the distribution of these three computer models among the 14 sample schools.

Table 2.1: Computer Models by Schools (Grades 7 & 8)

ICON ..... 3 schools
EDNET ..... 11 schools
Apple IIGS.. 10 of the 14 schools above

Altogether 76 of the 85 teachers who returned the questionnaire have direct or indirect access to CCU-funded computers. For the other nine teachers, five use other computer models only, for example Commodore C64 and Commodore PET. There are four teachers who do not use computers for their programs.

For the 76 teachers who have access to CCU-funded computers, most use one of the models, but there are a few who use more than one. (See Figure 2.1.)

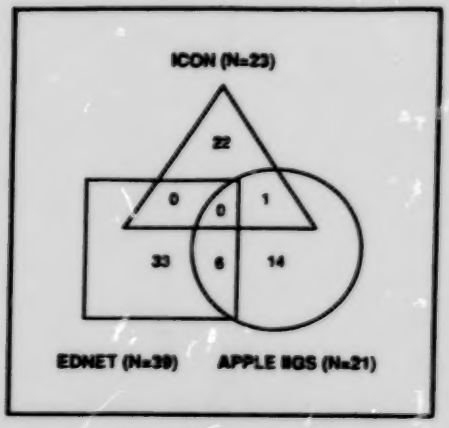

Figure 2.1: Teachers' Use of CCU-Funded Computers (Grades 7 & 8)

In addition to CCU-funded computers, 26 teachers also have access to other computers, mainly Commodore C-64 and Commodore PET.[3]

2. Both ICON and EDNET are networked systems; Apple IIGS is used as standalone.

3. Four teachers have either access to Apple MacIntosh, IBM-PC, AMIGA or Toshiba 1000 (a laptop model).

Teachers' Opinions on Hardware

The teachers were asked if the quantity of hardware made available to them is adequate in assisting them to deliver their programs. Below are the responses of the 76 teachers.[4]

Table 2.2: Teachers' Perception of Hardware Quantity (Grades 7 & 8)

	N = 76
Adequate	16 (21%)
Somewhat adequate	21 (28%)
Not adequate	27 (36%)
No response	12 (16%)

As far as the suitability of hardware is concerned, the teachers' responses are as follows.

Table 2.3: Teachers' Opinions on the Suitability of Hardware (Grades 7 & 8)

	N	Suitable	Somewhat Suitable	Not Suitable	No Response
ICON	23	48%	43%	9%	0%
EDNET	39	38%	28%	28%	5%
Apple IIGS	21	86%	10%	0%	5%

Clearly Apple IIGS users are most likely to be pleased with their model, while ICON users are more satisfied than those who have access to EDNET computers. The reasons mentioned most often for being somewhat or not satisfied with the models are: the network is not functioning, the computers are not user friendly, and there is not enough software available.

Among the 31 teachers who have access to "other" computer models, 19 (61%) find the computers suitable. For the 11 teachers who are not satisfied,[5] the only reason mentioned by more than two teachers is the lack of appropriate software.

4. If we examine the teachers' overall response by schools, in only three schools do most of their staffs find the quantity of hardware adequate. There are four schools in which most of the teachers find the quantity somewhat adequate; and the other seven schools have most of the teachers find it inadequate.

5. One teacher did not answer the question on the suitability of "other" computer models.

Arrangement of Computers

In general, the computers in the 14 schools are arranged in either one of the three settings: a lab-only arrangement, a classrooms-only arrangement, and a lab-and-classrooms arrangement. Table 2.4 and Figure 2.2 show the types of computer arrangements used by the 76 teachers who have access to CCU-funded computers.[6]

Table 2.4: Arrangement of Computers (Grades 7 & 8)

	N = 76
A lab-only arrangement	24 (32%)
A classrooms-only arrangement	24 (32%)
A lab-and-classrooms arrangement	28 (37%)

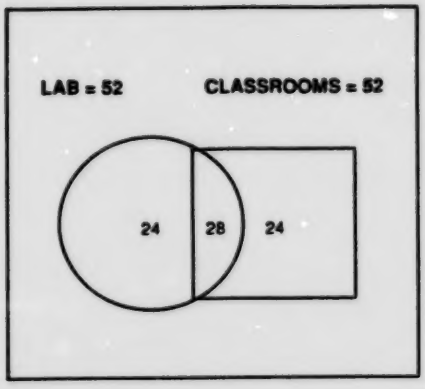

Figure 2.2: Teachers' Access to Different Computer Arrangements (Grades 7 & 8)

Lab Arrangement

According to Figure 2.2, 52 teachers have their students use computers in a lab. The amount of time their students spend in a lab per week/cycle varies from teacher to teacher. (See Table 2.5.)

6. Special education classes (for gifted, behavioral and learning disabled students) in all of the schools have computers in their classrooms and some also have access to the labs in their schools. Some of the schools have computers in the library and in other specialist rooms, such as the art and industrial arts areas.

Table 2.5: Amount of Time Students Spent in a Lab per Week (Grades 7 & 8)

N = 52

Less than one hour ..... reported by 23 teachers (44%)
Between 1 and 2 hours ... reported by 21 teachers (40%)
More than 2 hours ..... reported by 6 teachers (12%)
No response ..... 2 teachers (4%)

When their students are in the lab, the roles played by the teachers also differ. While most (60%) remain to be the teachers of the class, some are not present in the lab, and a few act as assistants to the computer teacher. (See Table 2.6.)

Table 2.6: Teachers' Roles in Computer Labs (Grades 7 & 8)

TEACHERS with access to ...	As teacher of the class	As assistant to a computer teacher	Not present	No Response
A lab only (N=24)	13 (54%)	2 (8%)	8 (33%)	1 (4%)
Both a lab & classrooms (N=28)	18 (64%)	4 (14%)	5 (18%)	1 (4%)
OVERALL	31 (60%)	6 (12%)	13 (25%)	2 (4%)

Table 2.6 shows that one-third of the teachers whose students have access to the lab-only arrangement are indeed <u>not</u> present in the lab, as opposed to 18% of those teachers who have access to the lab-and-classrooms arrangement.

It was learnt from the interviews that some (19) teachers take their whole class at one time, but there are more (26) who must split their class, either by sending half to another teacher (e.g. the teacher-librarian) or by giving half another assignment while the teacher attends to the computer users. Some of the teachers note that this arrangement presents serious problems for them in that the students not at the computers misbehave.

Classroom Arrangement

Figure 2.2 also illustrates that a total of 52 teachers have computers in their classrooms. Most of these teachers have between one and three units in the room. The types of computers they are using in the classrooms vary. (See Table 2.7.)

Table 2.7: Types of Computers in Classrooms (Grades 7 & 8)

	N = 52
Networked	24 (46%)
Standalone	21 (40%)
Both	5 (10%)
No response	2 (4%)

There are several ways in which computers are assigned to students in the classrooms.[7] For instance,

- 18 teachers have a schedule for student use of the computers,
- 8 allow students to use computers when they become available,
- 7 teachers assign use by student need,
- 7 say that use is entirely student directed, and
- 6 allow students computer use before and after school on a first-come-first-served basis.

Teachers' Opinions on Arrangement of Computers

Table 2.8 presents the teachers' satisfaction level with their current computer arrangements.

Table 2.8: Teachers' Satisfaction Level with their Current Computer Arrangements (Grades 7 & 8)

	N	Satisfied	Somewhat Satisfied	Not Satisfied	No Response
A Lab only	24	58% (14)	21% (5)	21% (5)	0% (0)
Classrooms only	24	33% (8)	25% (6)	33% (8)	8% (2)
Both a Lab and Classrooms	28	43% (12)	25% (7)	32% (9)	0% (0)

7. This information is obtained from the interview data.

At first glance, teachers who have access to the lab-only arrangement are most likely to be satisfied with their arrangement, while those with the classrooms-only arrangement are least satisfied. However, a closer examination of their explanations and recommendations reveals that for many teachers the reasons for their dissatisfaction have little to do with the type of arrangement itself. Rather they are not too satisfied with the conditions in the current setup at their schools. For instance, among the 14 teachers who are somewhat or not satisfied with their current classrooms-only arrangement, seven would likely be pleased if more hardware was available, if their computers were in working condition, or if there was a better physical setup in the classroom. Also, among those who are somewhat satisfied with their lab-and-classrooms arrangement, seven would be pleased if they could have more hardware in both settings, more time in the lab, or an assistant in the classroom.

Table 2.9 re-examines the teachers' preference when their explanations and recommendations are taken into account.

Table 2.9: Computer Arrangements & Teachers' Preference (Grades 7 & 8)

TEACHERS with access to ...	Satisfaction level	Lab only	Classrooms only	Both	No response/ recommendations
A lab-only arrangement (N=24)	Satisfied	14	-	-	-
	Somewhat or not satisfied	4(if...)	3	2	1
Classrooms arrangement (N=24)	Satisfied	-	8	-	2
	Somewhat or not satisfied	1	7(if...)	3	3
Both a lab & classrooms arrangement (N=28)	Satisfied	-	-	12	-
	Somewhat or not satisfied	4	3	7(if...)	2
TOTAL		23 (30%)	21 (28%)	24 (32%)	8 (11%)

Table 2.9 above shows that if the teachers' explanations are taken into considerations, the number of teachers who prefer the lab-only arrangement is about the same as those who prefer the classrooms-only arrangement, or those who want the lab-and-classrooms arrangement. In other words, the teachers as a group do not have a special preference for one particular type of setup over the others.

Standalone versus Networked Computers

Teachers were also asked to indicate their preference for networked or standalone computers if they have tried both. Among the 76 teachers, 51 responded to the question. Again as a group, the teachers do not show a decisive preference for one specific computer configuration over the other. (See Table 2.10.)

Table 2.10: Standalone versus Networked Computers (Grades 7 & 8)

	N = 51
Prefer networked	16 (31%)
Prefer standalone	18 (35%)
Prefer both 17	(33%)

Interestingly, if we examine the two variables together - computer configuration, and the types of computer arrangement, it is clear that teachers who have access to the lab-only arrangement tend to prefer networked system, those who use computers in their classrooms only have a stronger preference for standalone computers, and those who have access to both a lab and classrooms are likely to opt for both computer configurations. (See Figure 2.3.)

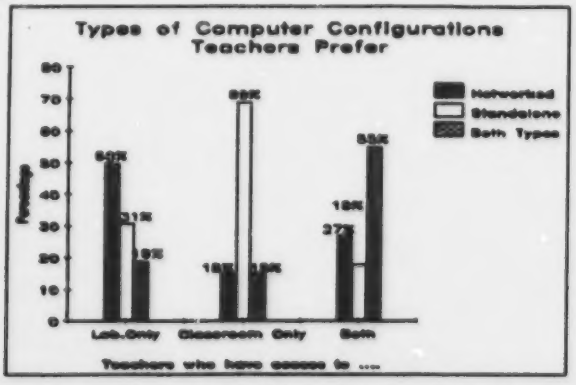

Figure 2.3: Computer Configuration and Arrangement of Computers

Software

Table 2.11 shows how satisfied the teachers are with the amount of software made available to them.

Table 2.11: Teachers' Perception of the Amount of Software (Grades 7 & 8)

	N	Satisfied	Somewhat Satisfied	Not Satisfied	No Response
ICON	23	22% (5)	52% (12)	26% (6)	0% (0)
EDNET	39	18% (7)	15% (6)	59% (23)	8% (3)
Apple IIGS	21	29% (6)	38% (8)	29% (6)	5% (1)

It is obvious that EDNET users are the least satisfied group of users.

As far as software suitability is concerned, the Apple users are the most satisfied. (See Table 2.12.)

Table 2.12: Teachers' Perception of the Suitability of Software (Grades 7 & 8)

	N	Suitable	Somewhat Suitable	Not Suitable	No Response
ICON	23	35% (8)	49% (11)	17% (4)	0% (0)
EDNET	39	23% (9)	46% (18)	21% (8)	10% (4)
Apple IIGS	21	57% (12)	24% (5)	10% (2)	10% (2)

For those who comment that the software is somewhat or not suitable, most (20) give the reason that suitable software is not available. There are some teachers who give more specific explanations such as: the software is not suitable for curriculum integration (cited by 2 ICON users and 3 EDNET users); the software is not updated to meet the expanding needs of students (mentioned by one ICON user and 3 EDNET users); and there is a lack of remedial or enrichment software to meet the diverse needs of students (mentioned by 5 ICON users).

Technical Support

Instructional Media Service (IMS)

Table 2.13 reports the amount of time the 76 teachers would spend on a technical problem before turning for assistance.

Table 2.13: Time Spent on a Technical Problem by Teachers (Grades 7 & 8)

	N = 76
1/2 hr or less	30 (39%)
Between 1/2 hour and 2 hrs.	23 (30%)
More than 2 hours	10 (13%)
No response	14 (18%)

Altogether 47 of the 76 teachers indicated in the questionnaire that they contacted IMS, particularly their schools' IMS technicians in the previous 12 months; most of them called only from one to five times. There are 24 teachers who also turned to other sources for assistance, mostly to the site administrator at their school, a consultant or another teacher. Table 2.14 shows the teachers' level of satisfaction with each of the service groups.

Table 2.14: Teachers' Ratings of Service Groups (Grades 7 & 8)

	N	Satisfied	Somewhat Satisfied	Not Satisfied	N/A or No response
School's IMS technician	43	56% (24)	16% (7)	23% (10)	5% (2)
IMS Media Centre	15	53% (8)	20% (3)	20% (3)	7% (1)
IMS at 155 College St.	14	50% (7)	21% (3)	14% (2)	14% (2)
Other	24	67% (16)	21% (5)	8% (2)	4% (1)

Most teachers - especially those who have contacted their site administrators, consultants, and/or their school's IMS technicians - are satisfied with the technical assistance they have received. Those who are dissatisfied most often say that IMS technicians are hard to reach, they are not available when the problem needs fixing, and they lack the necessary expertise to handle the problem.

Teachers other than site administrators were asked if they have performed any technical activities that they feel should be done by a technician. Seven teachers - i.e. one out of nine teachers - answered "yes".[8]

Maintenance

Forty-eight percent of the 76 teachers reported that they contacted the Board's Maintenance department for equipment repairs during the previous 12 months. Figure 2.4 shows how these teachers rate their satisfaction with the response time and the quality of repair work.

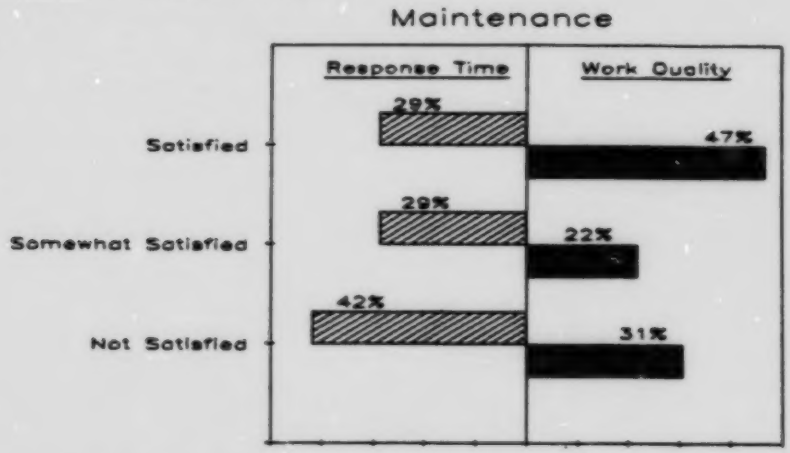

Figure 2.4: Teachers' Ratings of Maintenance Service: Response Time and Work Quality (Grades 7 & 8)

Apparently, the teachers are more satisfied with the repair work than with the response time. For those who are not too satisfied with the service, the most common complaint, after the long turn-around time, was that the equipment was not repaired properly.

8. The base number is 63 instead of 76 because 13 site administrators who returned their questionnaires were not supposed to answer this question.

Staff Development

Teachers' Knowledge Sources and Self-Rated Ability

Table 2.15 presents the sources from which teachers gain their knowledge of computer in education. For the 76 teachers who use CCU-funded computers, peers and release time in-service are the two most important sources of knowledge.

Table 2.15: Teachers' Sources of Knowledge on Computer Use in Education (Grades 7 & 8)

	N= 76
Peers	50
Release time in-service	45
Computers in Classroom Course	28
Self	25
Other courses	18
None of the above	6

Teachers were asked to rate their own ability in using computers with their class. Relatively few find themselves not able to use computers in their programs. (See Table 2.16.)

Table 2.16: Teachers' Self-Rated Ability (Grades 7 & 8)

	N = 76
Able	29 (38%)
Somewhat able	36 (47%)
Not able	7 (9%)
No response	4 (5%)

In-service Programs

When CCU-funded computers were delivered to a school, a Computer Resource Consultant would offer a release time in-service program to the school staffs. Table 2.17 shows the teachers' attendance in the in-service programs.

Table 2.17: Teachers' Attendance in In-service Programs (Grades 7 & 8)

	N = 76
All or almost all of the sessions	24 (32%)
Many of the sessions	14 (18%)
Few of the sessions	21 (28%)
None of the sessions	13 (17%)
No response	4 (5%)

Half of the 76 teachers attended all or many of the sessions. For the 34 teachers who attended few or none of the sessions, the most frequently cited reasons are:

- the equivalent to 10 days in-service was not available (23);
- some sessions were either canceled or run concurrently with workshops in their core area on "professional development" days and they therefore could not attend (10); and
- there were not enough supply teachers for release (5).

Teachers who received the in-service programs were asked to evaluate the in-service classes. Comparatively, the teachers are most satisfied with those topics related to word processing and computer operation, and least satisfied with such areas as "other tools", curricular integration and database management. (See Table 2.18.)

Table 2.18: Teachers' Evaluation of In-service Programs (Grades 7 & 8)

	Adequate	Somewhat Adequate	Not Adequate	N
Word Processing	49%	37%	14%	63
Computer Operation	36%	38%	26%	61
Software Uses (e.g. Simulation, Problem-solving, etc.)	23%	34%	43%	53
Database Management	13%	35%	52%	54
Curricular Integration	13%	33%	53%	45
Other Tools (e.g. Spreadsheet, Telecommunications)	10%	16%	74%	38

For those who find the programs inadequate, the most frequently mentioned comments are:

- the material was not covered (16);
- we had less than 10 days of instruction (6);
- follow-up time to practice is required (5);
- in-service must be intensive and on-going (4); and

- information is not appropriate for my needs (4).

Computer Applications

The following sections are mainly based on the data gathered from the teacher interviews. While the questionnaire items pertain to teachers' perception of Board support for computers in education, the interview questions focus on how teachers use, and would like to use, computers in their programs. Altogether 122 teachers were interviewed. However, in order to maintain the consistency of the sample group, only the responses of 74 teachers will be reported. These 74 teachers meet four criteria: (i) they returned the questionnaire, (ii) they have identified themselves in their returned questionnaires, (iii) they have used computers directly or indirectly with their students, and (iv) they were interviewed by one of our researchers.

Frequency of Use by Teachers

Teachers were asked how often they use computers with their classes. The responses of the 74 teachers are as follows.

Table 2.19: Frequency of Use by Teachers (Grades 7 & 8)

	N = 74
Use regularly	32 (43%)
Use to a limited extent	29 (39%)
Not using at all	13 (18%)

Let us examine the characteristics of teachers who make regular use of computers versus those who have limited or no use of computers.

Among the regular users ...	Among the minimal/non-users ...
over half (53%) have computers in both a lab and classrooms at their schools.	a vast majority (81%) have computers in either a lab or classrooms only at their schools.
the majority (69%) have access to standalone systems only or both standalone and networked.	nearly two-thirds (64%) have access to networked alone (20 with EDNET only and 7 with ICON only).
nearly half (47%) are special education teachers, 31% are homeroom teachers, and none are specialist teachers.	half of the teachers are homeroom teachers, 24% are special education teachers, and 17% are specialist teachers.
the majority (67%) attended all or many of the in-service sessions.	over half (55%) attended few or none of the in-service sessions.
44% find themselves able to use computers in their programs, 53% find themselves somewhat able, and none not able.	29% find themselves able to use computers in their programs, 52% find themselves somewhat able, and 14% not able (5% no response).

The comparison above indicates that teachers who have access to the lab-and-classrooms arrangement, and have access to standalone systems tend to use computers more regularly than their fellow teachers who have access to the lab-only or classrooms-only arrangement, or who have access to networked systems, especially EDNET, only.

Frequency of Use by Students

With regard to student use, over half (53%) of the 74 teachers reported that their students use computers at least once each week. (See Table 2.20.)

Table 2.20: Frequency of Use by Students Each Week (Grades 7 & 8)

At least once per week	reported by 39 teachers (53%)
Less than once per week	reported by 22 teachers (30%)
Don't know/ not applicable	reported by 13 teachers (17%)

Expectantly, a higher percentage of the regular users than the minimal or non-users (72% vs. 38%) reported their students using computers at least once each week.

As far as computer equity is concerned, 27 teachers (two-thirds of whom are regular users) note some disparity of use among students.

- 10 teachers note that students whose computer skills are above average use the computers more.
- 8 teachers say that boys are more likely than girls to use the computer.
- 7 teachers report that students who like computers use them more.
- 7 teachers find that computer use is low among students who, in general, are not motivated, who are non-risk takers, who are poorly organized or have behaviour problems.

Curricular Applications

Aside from the different degree of computer usage, the way the computer is being used also varies among the teachers.

- 45 have tried to integrate the computer to a varying extent with curriculum in activities such as writing, skill attacks and simulation.
- 37 teachers teach computer applications such as word processing and database management.
- 29 teachers have used computers to teach computer basics such as keyboarding, introduction to computer operation, fundamentals of the operating systems and software.
- 15 teachers use the computer for administrative purposes, such as typing assignments and tests, record keeping and correspondence.

Effects on Teaching Style

Of the 74 teachers interviewed, half (37) claim that the computer has made a difference in their teaching style. (See Table 2.21.)

Table 2.21: Effects of Computers on Teachers' Teaching Style (Grades 7 & 8)

	Regular users	Minimal/non-users	Overall
Have some effects	69% (22)	36% (15)	50% (37)
Have no effects	25% (8)	33% (14)	30% (22)
Not Applicable	6% (2)	31% (13)	20% (15)

The area that has been affect most is their teaching skills. For some teachers, the computer has given them a new tool and another area of content. For others the change is more significant: it causes them to rely less on texts, to individualize lessons, to be more creative, to communicate more with students on a one-to-one basis and even to change from a traditional class organization to an activity-centered class.

Aside from teaching skills,

- 13 teachers note that the computer becomes the focus of the class, either directing or adding to the curriculum or by dictating class organization;
- 11 teachers say that using the computer has made their attitudes more positive towards it as a teaching tool or changed their expectations of students (e.g. some note that they are surprised by the high levels of student competence in computer use); and
- 9 teachers also report that the computer assists them in its capacity to keep records, organize lessons and provide lessons, especially repetitive skill practice for students.

Effects on Students

Learning Process

Teachers were also asked to comment on the impact of computers on their students' learning process. (See Table 2.22.)

Table 2.22: Effects of Computers on Students' Learning Process (Grades 7 & 8)

	Regular users	Minimal/non-users	Overall
Have some effects	84% (27)	40% (17)	59% (44)
Have no effects	3% (1)	21% (9)	14% (10)
Don't know	3% (1)	10% (4)	7% (5)
Not Applicable	9% (3)	29% (12)	20% (15)

Overall, nearly 60% of the 74 teachers think computers have affected their students' learning process. The most frequently (30) mentioned effects are in the area of student behaviour, e.g. computers motivate students, computers give students a sense of accomplishment, and computers make work more enjoyable.

Eleven teachers mention that computers help break limits and thereby allow students access to creativity and knowledge. Some teachers say that computers encourage problem solving, and some note that students are more productive when they use computers.

Student Creativity

In addition to learning process, teachers were asked to comment the effects of computers on students' creativity. (See Table 2.23.)

Table 2.23: Effects of Computers on Students' Creativity (Grades 7 & 8)

	Regular users	Minimal/non-users	Overall
Have some effects	62% (20)	26% (11)	42% (31)
Have no effects	13% (4)	33% (14)	24% (18)
Don't know	9% (3)	7% (3)	8% (6)
Not Applicable	16% (5)	33% (14)	26% (19)

Among the 31 teachers who think that computers have such an impact, their comments are as follows.

- 17 said in the interview that computers stimulate student curiosity, imagination, exploration, experimentation and communication. Many of these teachers note that the computer, in general, motivates students and therefore elicits creative behaviour;

- 17 teachers also state that computers are a creative tool which allows students to produce books and stories for their fellow students and, moreover, allows them the flexibility to easily alter what they write;

- 11 teachers report that by using computers students can break through limitations which would otherwise limit student creativity. They specifically mention illegible handwriting in the case of creative writing.

Teachers' Comments and Suggestions

Finally, teachers were questioned on how they would like to use computers with their classes, and how the Board could support them.

Preferred Use

- 36 would like to integrate computer use with curriculum through such activities as writing, skill attacks, tutorials and using information from data bases.

- 22 teachers would like to teach computer applications - word processing, programming, data bases and spreadsheets.

- 5 teachers say they have to begin by teaching basic skills such as keyboarding, computer operation and familiarizing students with the operating systems and software.

- 15 would like to use the computer to assist them in writing assignments, record keeping, correspondence and conferencing with other teachers.

- 18 teachers are <u>not</u> specific about how they would like to use the computer. Interestingly, 11 of these 18 teachers are regular users. They only say, for example, to use them more frequently, more creatively, for student review, in the classroom, in a more integrated way.

- 6 teachers, five of whom are minimal or non-users, express that they do not want to use computers.

Teachers' Other Needs

In addition to their demand for more hardware and more suitable software, some teachers suggest other types of support they wish the Board to offer. Their most frequently stated needs centre around (i) knowledge and information (cited by 49 teachers), (ii) time (cited by 33 teachers), (iii) hardware (15 teachers), and (iv) technical support (10 teachers).[9]

- **Knowledge and Information:** 32 teachers want to acquire general computer literacy and knowledge about computer applications; 25 want more in-service training;[10] 11 say they need access to information about computer uses in education and about other available software.

- **Time:** 24 teachers want more time to learn, practice or prepare lessons; 12 would like to have more time with their students; and 16 teachers want student timetabling reorganization.

- **Hardware:** 15 teachers maintain that they need access to a computer in order to practice and plan lessons around computer use.

- **Technical Support:** 10 mention the need for more technical support.

9. During the interview, some teachers made very specific suggestions on how the Board could support them. See Appendix 10 for details.

10. Five of the teachers indeed asked for one to one instruction, and six others specified that they want more intensive courses

2.2 Responses from Elementary School Principals

Thirteen principals from the 14 schools returned their questionnaires and were interviewed. Aside from reporting the principals' overall response, we shall also examine their perception with respect to that of their staff members.

Hardware

Principals' Opinions on Hardware

In terms of hardware quantity, the school principals generally have similar perception as to the teachers. That is, most express the need for more hardware to support their school programs.

Table 2.24: Principals' Opinions on Hardware Quantity (Elementary)

	N
Adequate	3
Somewhat adequate....	5
Not Adequate	5

It should, however, be noted that there are five principals who find the quantity of computers somewhat adequate or adequate while their staffs find it inadequate.

Table 2.25 shows the principals' perception of hardware suitability.

Table 2.25: Principals' Opinions on the Suitability of Hardware (Elementary)

	Suitable	Somewhat Suitable	Not Suitable
ICON	2	0	0
EDNET	3	7	1
Apple IIGS	5	1	0

Both principals who have ICON computers at their schools find the model suitable for their school programs. For those who have

EDNET computers, most find the model somewhat suitable. Their complaints centre around the problems associated with networked system, e.g. there is too much down time, the model is incompatible with other systems, the computers cannot be used at home, and the system requires a site administrator.

As in the case of grade 7 and 8 teachers, most principals who have AppleIIGS say the model is suitable, and none find it not suitable.

Arrangements of Computers

While the teachers' questionnaire results do not indicate a decisive preference for one particular type of computer arrangement (see page 11), Table 2.26 clearly shows that most principals prefer both a lab and classrooms arrangement (6), followed by the classrooms only arrangement (4).

Table 2.26: Principals' Perception of Computer Arrangements (Elementary)

Principals with computers in ...	N	Prefer a lab only arrangement	Prefer classrooms arrangement	Prefer both	No Response
A lab only	6	1	1	3	1
Classrooms only	3	-	3	-	-
Both	4	-	-	3	1
TOTAL	13	1	4	6	2

For those principals who prefer both a lab and classrooms arrangement, five would like to use the lab for skills instruction and introduction to software, with classrooms for follow-up and integration. For those who want classrooms only, their rationale is that the classroom arrangement would be easier for curriculum integration, and students can have access to computers all the time. The principal who prefers the lab only arrangement explains that there are not enough teachers who have experience to work with computers, whereas in the lab arrangement, only the site administrator needs the expertise.

Networked versus Standalone

In terms of computer systems, the principals also show a more definite pattern of preference than that of their staff members. (See Table 2.27.)

Table 2.27: Standalone versus Networked Computers (Elementary School Principals)

	N
Prefer standalone	6
Prefer networked	2
Prefer both	3

For those who prefer standalone, they find it more user friendly, more dependable, more flexible (at least more portable), and having more suitable software. For the two principals who prefer networked, both say that the staff is already familiar with the system - "seems we are stuck with what we've got". For those who would like both, they state that with both more variety is available and that each has its own merits.

Software

Tables 2.28 and 2.29 show the principals' response to the questions on the amount and suitability of software. Compared with the teachers' response (see Tables 2.11 and 2.12 on page 13), the principals seem to be more positive than their staffs, except for the case of AppleIIGS in which the teachers are more positive.

Table 2.28: Principals' Perception of the Amount of Software (Elementary)

	Satisfied	Somewhat Satisfied	Not Satisfied
ICON	1	1	0
EDNET	3	5	3
Apple IIGS	2	1	3

Table 2.29: Principals' Perception of the Suitability of Software (Elementary)

	Suitable	Somewhat Suitable	Not Suitable
ICON	2	0	0
EDNET	3	6	2
Apple IIGS	2	3	1

Technical Support

Principals from eight schools say that their staffs have to perform technical activities that they think should be done by a technician.

Instructional Media Service (IMS)

The principals were also asked to rate their satisfaction level with the IMS support. (See Table 2.30.)

Table 2.30: Principals' Perception of IMS (Elementary)

Satisfied	4
Somewhat satisfied	5
Not satisfied	3

For those who are not too satisfied, the major complaint is that it is hard to get the technicians when needed.

Maintenance

The principals' response to maintenance service is similar to that related to IMS. (See Table 2.31.)

Table 2.31: Principals' Perception of Maintenance Service (Elementary)

Satisfied	4
Somewhat satisfied	5
Not satisfied	3

The major complaints are long turn-around time, and "service not available/hard to find the knowledgeable person".

Site Administrators

Among the 13 principals, about half (7) think that their site administrators have a work load equal to the work load of other teachers. Six think that the work load is more. Their suggestion is to have full-time site administrators, or to reduce the teaching load of site administrators. One principal also suggests the need to provide assistance or support to site administrators. Indeed, eight principals note that their site

administrators have to perform technical activities that they think should be done by a technician.

Staff Development

The principals were asked to rate how useful the release-time in-service program has been in preparing their teachers to use computers as a teaching/learning tool. Table 2.32 presents their responses.

Table 2.32: Principals' Ratings of Release-time In-service Programs for Teachers (Elementary)

Useful	4
Somewhat useful	7
Not useful	2

For those who find it somewhat or not useful, their comment is that there are not enough supply teachers for releasing the teachers. Two principals also mention that the teachers have no "hands-on access to practice".

Major Concerns

Below are a few major concerns expressed by the principals during interviews:

- the need for more hardware (10);
- more support in the form of inservice workshops (5); and
- more time for teachers to learn, practice, and use computers in teaching. (7-10).

The principals were also asked if their schools have any problems with relying too much on one key person to take the leadership role in helping teachers with computers. Although all principals responded that they have officially assigned one person to take the key leadership role, only two schools have experienced a sudden deficit when the key person leaves the schools. It seems that at this point the elementary school principals in general do not see this as a problem.

Chapter 3

Computer Studies Programs in Secondary Schools

3.1 Responses from Computer Studies Teachers

Twenty-two of Toronto's secondary schools were selected. These schools received CCU-funded computers - ICON and/or EDNET - between 1984 and 1986. Altogether 75 Computer Studies teachers from the 22 secondary schools returned their questionnaires. The response rate is over 90%. However, only 71 of the respondents will be included in the analysis because four other teachers use mainframe terminals for their Computer Studies programs.

The data gathered from the returned questionnaires will be presented under the following headings:

- Hardware
- Software
- Technical Support
- Other Restrictive Factors

Hardware

Figure 3.1 illustrates the computer models the 71 Computer Studies teachers have access to.

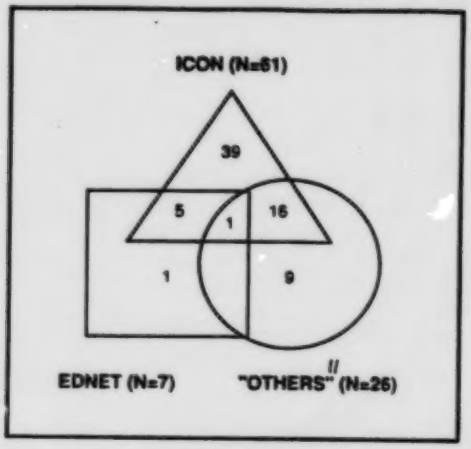

Figure 3.1: Computer Studies Teachers' Access to Computer Models

Altogether 62 of the 71 teachers have access to one or both CCU-funded computer models. In terms of schools, all 22 schools have ICON and/or EDNET computers; but there are three schools in which only one of the Computer Studies teachers is using either model.

Teachers' Opinions on Hardware

Among the 62 teachers who use ICON and/or EDNET computers, most have access to an average of 15 units in their school labs. Table 3.1 shows how the Computer Studies teachers respond to the question concerning the amount of hardware.[12]

Table 3.1: Teachers' Opinions on the Quantity of Hardware (Computer Studies Programs)

Adequate	12 (19%)
Somewhat adequate	22 (37%)
Not Adequate	26%(42%)

11. It should be noted that 37% of the 71 teachers (i.e. 26) have access to other microcomputer models for their programs. Most teachers (16) have access to Commodore PET, some have access to Commodore C64 (9), and a handful have Apple Mac (4) or IBM PC (6).

12. Two teachers did not answer this question.

It was found that there is no correlation between the teachers' perception of hardware adequacy and the number of computer units they have access to. Teachers with relatively few computers (e.g. 6-11) naturally want more, while those with a reasonably large number of computers (e.g. 20-23) want to reduce the student-computer ratio to 1:1. Hence, nearly 80% of the ICON/EDNET teachers want to have more computer units, preferably one for each student in the computer lab. Some teachers comment that the lack of computers has dampened their students' enthusiasm in Computer Studies.

In addition to the needs for more hardware, two-thirds of the teachers (40) who have access to ICON want to upgrade their existing units in one way or another.[13]

Table 3.2: Types of Upgrading ICON Teachers Desire (Computer Studies Programs)

Fileserver Hard Disk to 64MB ..... 20 teachers (from 13 schools
Workstation memory to 512K or 1 megabyte ... 18 teachers (from 13 schools)
Monochrome monitors to colour ..... 30 teachers (from 18 schools)

With regard to hardware <u>suitability</u>, the teachers' perception is presented in Table 3.3.

Table 3.3: Teachers' Opinions on the Suitability of Hardware (Computer Studies Programs)

	N	Suitable	Somewhat Suitable	Not Suitable	No Response
ICON	61	25 (41%)	30 (49%)	5 (8%)	1
EDNET	7	3	1		3

Of those who find ICON somewhat or not suitable, many indicate their preference for the commercially available systems, such as IBM PC or IBM compatibles, and Apple Mac. These teachers find the "other" models more powerful, more user friendly, and having more "real-world" applications. Indeed, among the handful of teachers who have access to IBM PC, Apple MAC or Commodore C64, almost all find them suitable for their programs. The only "other" computer model most teachers consider unsuitable is

13. In terms of schools, 16 schools have at least two of their Computer Studies teachers who want to upgrade the hardware.

Commodore PET, which they find obsolete and too worn out for their programs. As far as the EDNET model is concerned, two of the teachers mention the incompatibility between the EDNET networked system and standalone computers.

Software

Tables 3.4 and 3.5 show how the teachers respond to the questions concerning the amount of software and its suitability according to the three Computer Studies areas - Introductory Computer Studies, Computer Science, and Data Processing.

Table 3.4: Teachers' Opinions on the Quantity of Software (Computer Studies Programs)

	N	Adequate	Somewhat Adequate	Not Adequate
Introductory Computer Studies	48	48%	31%	21%
Computer Science	35	46%	37%	17%
Data Processing	15	33%	33%	33%

Table 3.5: Teachers' Opinions on Software Suitability (Computer Studies Programs)

	N	Suitable	Somewhat Suitable	Not Suitable
Introductory Computer Studies	48	35%	48%	13%
Computer Science	35	31%	60%	9%
Data Processing	16	19%	56%	25%

It is clear that Data Processing is the area that has the lowest satisfaction level both in terms of quantity and suitability of software. Some teachers say that ICON software is simply inadequate for teaching Data Processing. It should, however, be noted that the other two areas also require more and better software. Some Computer Science teachers point out that the existing ICON software is not user-friendly (in terms of speed and sophistication) and it lags behind the commercial/industrial software.

Technical Support

Teachers were asked how long they would work on a technical problem before turning for technical assistance.

Table 3.6: Time Spent on Technical Problems by Teachers (Computer Studies Programs)

Half an hour or less.....	17 (27%)
Half an hour to two hours....	18 (29%)
Two to hour hours.....	6 (10%)
More than four hours.....	2 (3%)
No response.....	19 (31%)

As shown in Table 3.6, the majority of teachers would work for less than two hours, and only a handful of teachers would spend more than two hours. There are, however, 19 teachers (31%) who did not answer the question.

Of the 62 ICON/EDNET users, nine teachers performed some technical activities that they think should have been done by a technician. These activities include dismantling and connecting workstations and monitors before and after repair service, installing and/or upgrading operating systems, debugging technical problems, and checking and maintaining computer accessories, such as printers, keyboards, monitors and cables.

Instructional Media Service (IMS)

Over half (55%) of the 62 ICON/EDNET users turned to IMS for assistance during the previous 12 months. Among the three IMS groups, IMS at 155 College Street was being contacted most. (See Table 3.7.)

Table 3.7: Teachers' Opinions on Technical Support Service (Computer Studies Programs)

	N	Satisfied	Somewhat Satisfied	Not Satisfied	No Response
School IMS technicians	21	33% (7)	29% (6)	38% (8)	0% (0)
IMS Media Centre	15	33% (5)	33% (5)	20% (3)	13% (2)
IMS at 155 College St.	26	42% (11)	31% (8)	19% (5)	8% (2)
Other(s)	10	60% (6)	30% (3)	0% (0)	10% (1)

The teachers are also more satisfied with the service of the central IMS than that of either the school IMS technician or Media Centre. Quite contrary to the case of grade 7 & 8 teachers, the Computer Studies teachers are most dissatisifed with the school IMS technicians. The main complaint is that the personnel involved are not knowledgeable or up-to-date enough on the ICON system. Another major complaint is that teachers find it hard to contact their school IMS technicians when problems arise. Although more teachers are satisfied with the service at 155 College Street, some teachers do find the turn-around time too long to have their problems solved.

Some teachers also turn to other sources, especially the hotline service provided by UNYSIS, for technical support. Virtually all find the service either satisfactory or somewhat satisfactory.

Maintenance

Of the 62 ICON/EDNET users, 42 requested services from the Board's Maintenance department during the previous 12 months. Generally, these teachers are more satisfied with the quality of repair work than with the response time. (See Figure 3.2.)

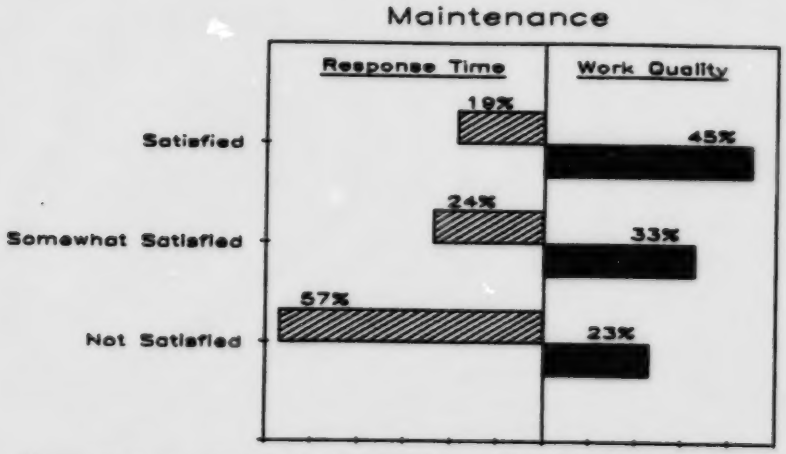

Figure 3.2: Computer Studies Teachers' Perception of Maintenance Service

For those who are not satisfied with the repair work, the often cited reason, after the long turn-around time, is that problems recur shortly after repair.

Other Restrictive Factors

In addition to the issues discussed above, the Computer Studies teachers were asked to list other restrictive factors to their computer use. Thirty-seven teachers answered the question. Their responses can be grouped in four categories.

1. **Teachers' knowledge and time:** Some teachers indicate that they feel inadequate in terms of technical expertise and/or knowledge of instructional methods to teach Computer Studies programs (4); there were indeed suggestions for more inservice training in technical aspects and/or instructional methods (6); some teachers find it difficult to find time to learn, prepare, or keep up-to-date with the rapidly changing technology (8); and some teachers request more immediate technical support, e.g. an on-site technician for each school (so that teachers do not have to spend as much time solving technical problems) (4).

2. **Cross-curricular use:** There is also concern that the introduction of cross-curricular use would affect their Computer Studies programs in terms of availability of computers, site administrator's time, and the time and involvement of Computer Studies teachers themselves. Some teachers suggest the need for more Board support by providing, for example, more hardware or a second lab, more software, and technical support for cross-curricular initiative (7).

3. **Hardware/software:** Some teachers mention that the software and hardware supported by the Board do not compare well with other systems, such as Apple Mac, or IBM, in terms of user-friendliness, quality design, and "real world" applications (8).

4. **Other Resources:** There are also complaints about the lack of or the poor quality of documentation for the existing software and/or hardware (5) and the need for more resource materials (e.g. textbooks, audio-visual materials) to assist them in teaching their Computer Studies programs (6).

3.2 Responses from Secondary School Principals

School principals from the 22 secondary schools were asked to answer six open-ended questions. Of the 22 principals, 20 returned the questionnaire. Their responses will be reported under the following headings.

- Board support
- Cross-curricular use
- Students entering from elementary schools
- Leadership role
- Site administrators' work load
- Other restrictive factors

Board Support

The secondary school principals were asked if they think the Computer Studies program in their schools has been adequately supported by the Board in terms of hardware, software, technical support and maintenance service

Hardware

All 20 school principals talked about hardware for their Computer Studies program.

- 7 find the hardware provided by the Board adequate or somewhat adequate.
- 8 principals state that more hardware is needed.[14]
- 6 principals mention the need to upgrade or replace their computers.[15]
- 1 principal comments that ICON system is inappropriate.[16]

Software

Only seven principals mentioned the software issue.

- 4 find the software supported by the Board adequate.
- 2 find it inadequate.
- 1 says it is adequate but has technical problems.

Technical Support

Half (10) of the principals who returned the questionnaire talked about technical support. The most freqently cited comments are:

- more technical support is needed (5); and
- the service is not too satisfactory (e.g. IMS technicians lack expertise in dealing with the equipment) (4).

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14. It should be noted that among the other 12 principals who do not mention the need for more computer units, three of them have some of their staff members indicating that the amount of available hardware is not adequate for their Computer Studies programs.

15. It should also be noted that there are 16 schools in which more than one of the Computer Studies teachers have expressed the need to upgrade the hardware (see footnote on page 33).

16. It was found that in his/her school, five Computer Studies teachers do not use ICON, and the only teacher who does also finds the model not suitable (mainly because of the lack of quality software).

Maintenance

- 4 principals find the service satisfactory.
- the other 4 principals find the service not too satisfactory.
- 1 wants more maintenance service.

Cross-curricular Use

Although over half of the principals (11) report that their computer labs have been used for cross-curricular purposes to a certain extent, many have encountered hindrances in doing so.

- 15 principals find it difficult to schedule their Computer Studies labs for cross-curricular use. Instead, some principals suggest the need for more hardware for other departments or a second lab dedicated for cross-curricular use.
- 12 principals talk about the general inertia among subject area teachers because of the lack of knowledge, faith, incentives and/or time.
- 10 cite teachers' lack of familiarity or comfort with the ICON system as a hindrance.
- The lack of suitable software for other subject areas is mentioned by 7 principals.
- 3 principals state the need for increasing the time and expertise of their site administrators in order to support cross-curricular use.

Students Entering from Elementary Schools

Ten principals do not think their staffs have difficulties in meeting the computer skill level of students who are entering from elementary school.

For another five principals, their major concern is to meet the expectation of these students and their parents in terms of quantity and sophistication of both hardware and software.

One principal finds a general lack of expertise or comfort level among his/her staffs to supervise students. Another principal comments that the existing computer courses are outdated and inappropriate to cope with the diverse skills level of the students.

Leadership Role

Nine school principals report that their schools have a number of staff members being actively involved and/or assuming leadership roles in helping teachers with computers. Hence they do not have, or foresee, a sudden deficit in the use of computers when one key person leaves the school.

Eleven principals, however, either have experienced or foresee the abovementioned problem.

- 8 suggest that more staff members should be encouraged to become familiar with the system.
- 2 principals report that committees or teams have been formed to promote the use of computers at their schools.
- 1 principal suggests more staff training via workshops or evening classes.
- Another principal, however, says that most teachers do not want to be involved because of constant frustrations.

Site Adminstrators' Work Load

Five principals do not think their site administrators have any serious work load problem, but two of them add that increasing work load will be expected if there are more demands from other departments in the future.

Other school principals (14) do think their school site administrators have a heavier work load than other regular teachers. Most of the principals report that reducing a period or two from their site administrators' daily timetable to compensate the time. Yet some principals still think that site administrators need much more time to do their job, and some add that time allocation has become increasingly difficult because of tight staffing.

Two school principals further mention the need for clear role definitions and job descriptions, and that the extra hours should be recognized by the system and other staff members. Three other principals suggest the necessity for more technical support from the Board.

Other Restrictive Factors

Aside from the problems discussed above, some principals mention other restrictive factors, such as:

- inertia among staff members (3);
- the lack of resources, in particular hardware, from the Board (6); and
- the incompatibility of their existing computer systems (4).

Chapter 4

Site Administrators

Site administrators at the 14 elementary and the 22 secondary schools were sent two separate questionnaires - one in early March and the other in late April. In the first questionnaire, site administrators were asked (i) to report the estimated time required to perform the various tasks associated with their role, and (ii) to suggest any activities requiring additional technical assistance. Site administrators from 11 (79%) elementary schools and 19 (86%) secondary schools returned the first questionnaire.

With the responses gathered from the first questionnaire, a second questionnaire was developed, in which site administrators were asked to indicate the degree of support and assistance they desire for each of the activities suggested in the previous questionnaire. The return rate in this second round is about 84%.

The data collected from both sets of questionnaires will be reported under three headings.

- Time Requirements
- Technical Activities that Require Additional Assistance
- Recommendations regarding Board Support.

Time Requirements

Table 4.1 shows the estimated number of hours ICON and EDNET site administrators reported for performing their various tasks each year.[17]

Table 4.1: Time Requirements for Site Administrators' Tasks (Hours/Year)

	ICON N = 19		EDNET N = 14	
	Mode	Range	Mode	Range
System Maintenance	40-60	8-140	10-20	3-70
System Installation	40-50	2-200	40-45	15-60
Teacher Support	20-30	2-150	5-10	4-55
System Clean-up	10-15	3-115	5-10	1-12
Other Tasks	15-20	5-155	5-10	1-71
Total	125-175		65-95	

System maintenance and system installation are the two major tasks which take up most of site administrators' time. On average, however, EDNET site administrators reported fewer hours than their ICON counterparts. The different time requirements can largely be explained by the fact that the support plan for the EDNET installation was more extensive than that for the earlier installation of ICON computers.

17. The "mode" represents the most often reported hours, and the "range" shows the extreme cases.

Technical Activities that Require Additional Assistance

In the first questionnaire, site administrators cited 14 technical activities for which they wish to get additional assistance. Table 4.2 shows the percentages of site administrators who wish to get a lot of assistance for each of the activities.[18]

Table 4.2: Site Administrators' Tasks that Require a Lot of Assistance

	OVERALL N = 32	
1. Troubleshooting and/or debugging technical problems	59%	PROBLEM-SOLVING
2. Elicit repairs/correction of system breakdowns	50%	
3. Hardware installation	22%	
4. Installing/upgrading operating system	19%	SYSTEM INSTALLATION
5. Configuring new software programs	25%	
6. Dismantling and connecting work stations before and after repairs	13%	
7. Checking and maintaining hardware	6%	
8. Back-up	19%	SYSTEM MAINTENANCE
9. Cleaning disk space	19%	
10. Cleaning screens and keyboards	19%	
11. Learning the system	34%	
12. Disseminating software and information re: software	31%	INFORMATION
13. Helping other teachers with technical problems	22%	TEACHER SUPPORT
14. Inservice to teachers	25%	

In general, site administrators need most help in problem-solving activities such as troubleshooting, debugging and correcting system breakdowns. The second area that requires a lot of assistance is upgrading their own knowledge base, and the third area has to do with teacher support.

18. See Appendix 11 for the full table.

Figure 4.1 illustrates the different amounts of assistance requested by the two groups of site administrators - ICON and EDNET.

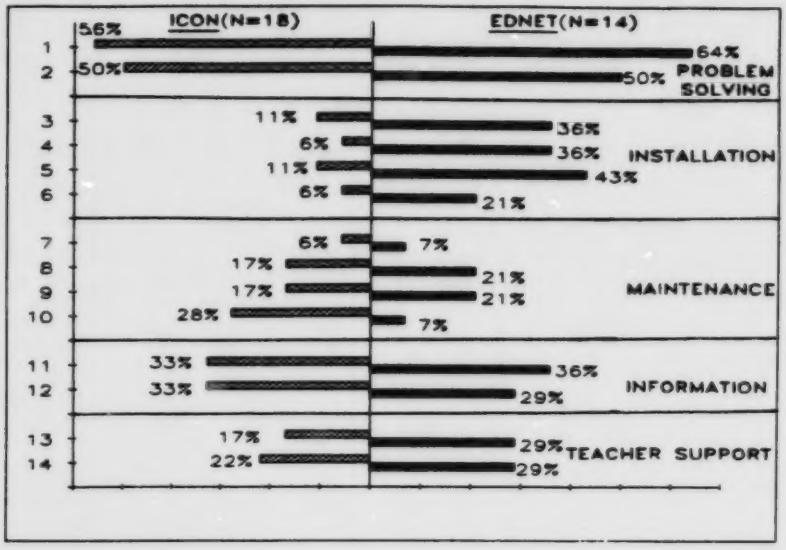

Figure 4.1: Site Administrators' Tasks that Required a Lot of Assistance - ICON vs. EDNET

Except for cleaning screens and keyboards, in all other activities more EDNET site administrators than their ICON counterparts wish to get a lot of assistance, especially in system installation area where the percentage difference between two groups is significant.

Recommendations Regarding Board Support

In the first returned questionnaire, site administrators made recommendations regarding methods by which the Board could provide their requested support. Altogether 21 suggestions were made. Table 4.3 presents the site administrators' responses to each of the suggested items. The percentage in each item represents the proportion of site administrators who think the kind of support is very important to their role.[19]

Table 4.3: Types of Board Support that are Very Important to Site Administrators

	Overall N = 32	
1. Provide site administrator seminars for new systems	84%	OWN ROLE
2. Reduce course load for site administrators	66%	
3. Better qualified technicians	45%	
4. On site technicians for schools	29%	
5. Have subject consultants introduce software appropriate to their curriculum area	34%	
6. Provide more consultants	25%	HUMAN
7. Create technical teams (technician and consultant)	22%	RESOURCES
8. Provide funds for technical assistance (i.e. co-op student)	19%	
9. Arrange caretaking assistance for hardware	13%	
10. Support "hotlines"	66%	
11. Monitor new system releases (debug before sending)	63%	PROBLEM-
12. Provide handbook of error messages	47%	SOLVING
13. Install phones in the labs	47%	
14. For each type of computer system standardize the systems	31%	EQUIPMENT
15. Provide user friendly equipment	38%	
16. Provide equipment loans during repair period	34%	
17. Provide prompt service	88%	
18. Improve communication	44%	
19. Provide more access to technical assistance	34%	GENERAL
20. Have a software library in the school library	16%	
21. Give support to system programmers	9%	

19. See Appendix 12 for the full table.

Among the 21 types of Board support recommended, the five most important types in descending order are: providing prompt service, offering site administrator seminars, reducing course load, supporting hotline services, and monitoring new system releases - two of which have to do with the site administrators' own role, and the other two are related to problem solving.

Figure 4.2 illustrates the different perception of Board support between the ICON and EDNET site administrators.

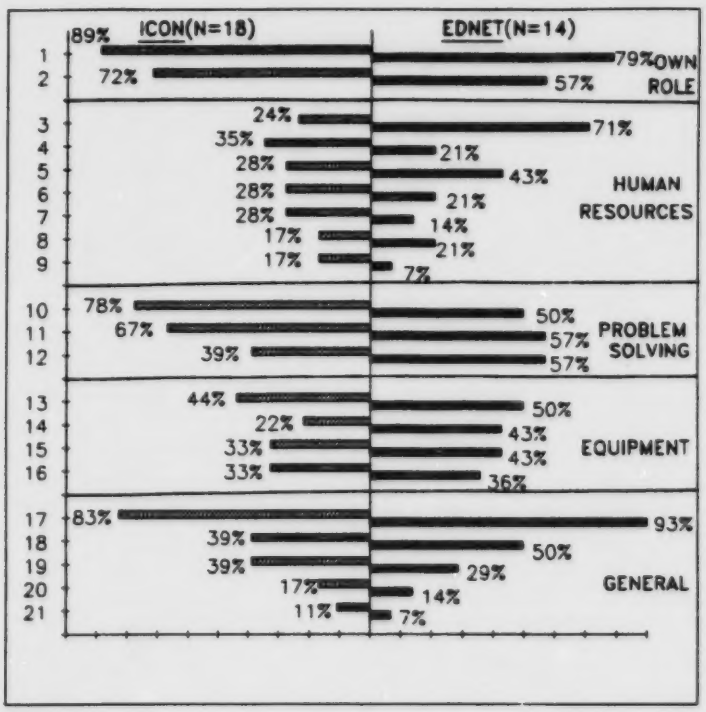

Figure 4.2: Types of Board Support that are Very Important to ICON & EDNET Site Administrators

Comparatively, a higher percentage of ICON site administrators than their EDNET counterparts find it very important for the Board:

- to support their role - by offering special seminars and by reducing their course load;

- to help them with technical problems - by maintaning the "hotline" service, and by monitoring new system releases; and

- to increase human resources - by having on-site technicians and more consultants, and by creating technical teams.

On the other hand, more EDNET site administrators than their ICON peers find it very important for the Board:

- to provide such general support as prompt service and better communication;

- to improve the quality of existing staffs - by having better qualified technicians, and by having subject consultants introduce software appropriate to their curriculum area; and

- to offer them such facilities as a phone in the lab, user friendly equipment, and standardized computer systems.

Chapter 5

Registrants in "Computers in Education" Courses

Two hundred and fifty-seven copies of the "registrant" questionnaire were sent out to Board members who registered in the Computers in Education Staff Development Program between 1986 and 1989. Altogether 139 registrants returned the questionnaire - a return rate of 54%. These registrants include:

- 75 principals/vice-principals (54%),
- 30 consultants (22%),
- 12 superintendents (9%),
- 8 co-ordinators (6%),
- 6 advisors (4%), and
- 3 "others" (2%).[20]

Attendance

Of the 139 registrants, nearly 70% attended either all or many of the sessions. (See Table 5.1.)

Table 5.1: Registrants' Attendance

All, or almost all, of the sessions	50 (36%)
Many of the sessions	46 (33%)
Few of the sessions	30 (22%)
None of the sessions	7 (5%)
No response	6 (4%)

For the 37 who attended few or none of the sessions, the most often cited reasons are:

20. Five registrants did not identify their positions.

- they could not afford to give up so much time (17);
- they could not attend at the time the course met (13); and
- the program did not meet their needs (11).

When asked if they plan to register in the programs in the future, 23 of these 37 registrants (62%) answered "no". The reasons are: they are already familiar with computers (7); they have been learning computers on their own (4); their needs are not related to teaching or curriculum (5); or they find the programs not relevant to their positions or needs (4).

General Awareness of Curricular Applications

The registrants were asked to rate how successful the staff development program was in providing them a general awareness of the various curricular applications of computers in the classroom. Table 5.2 shows the response of the participants in each of the six curricular applications areas.

Table 5.2: Registrants' Evaluation of Staff Development Program

	N	Adequate	Somewhat Adequate	Not Adequate
Computer Operation	89	66%	32%	2%
Word Processing	93	60%	34%	5%
Software Uses	88	48%	40%	12%
Curricular Integration	86	40%	42%	19%
Database Management	83	36%	49%	15%
Other Tools	75	23%	44%	33%

The three areas which have received the most favorable rating are Computer Operation, Word Processing, and Software Uses, while "Other Tools" (such as Telecommunications and Spreadsheets) has the lowest rating. The two most often cited reasons are: "not enough hands-on time to acquire skills or feel comfortable with the computer"; and "the topics were not covered/ or they might have missed the sessions".

Self-Rated Ability

Based on their knowledge related to curricular applications of computer technology, the registrants were asked to rate their ability to fulfil their particular roles and responsibilities in the school system. Only six percent of the registrants find themselves not able to fulfil their roles. (See Table 5.3.)

Table 5.3: Registrants' Self-Rated Ability

Able	55 (39%)
Somewhat able	61 (44%)
Not able	8 (6%)
No response	15 (11%)

Some registrants suggested ways in which they think the Board could best help them fulfil their roles. The two main suggestions are to make more hardware available, and to offer more inservice.

Effects of the Staff Development Program

The 96 participants who attended all or many of the sessions were asked to rate their ability as a result of the staff development program. (See Table 5.4.)

Table 5.4: Ability as a Result of Staff Development Program (Registrants)

	Much Better	Somewhat Better	Not At All	No Response
Understand literature related to computers in education, or talk to others more easily about computers in education.	37 (39%)	55 (57%)	2 (2%)	2 (2%)
Offer advice and support to others in the school system	25 (26%)	57 (59%)	12 (13%)	2 (2%)

Table 5.5 shows the activities some of the participants have engaged in since they completed the program. It should be noted that 73 of the 96 participants have engaged in at least one of the activities.

Table 5.5: Activities since the Completion of Staff Development Program (Registrants)

Dialogued with people knowledgeable about computers with the goal of improving your knowledge	67
Read journals/books etc. related to computers in education	44
Acquired a computer (home or office)	44
Attended a computer conference	9
Enrolled in some other course/program	9

Administrative Applications

Registrants were asked if they would like to use computers for administrative/professional applications (although this is not a mandate in Board computer education policy). One hundred and two registrants answered "yes", and 86 of them state that they need "in-service" related to those uses. Many (53) of these registrants also suggest that the Board can best assist them by offering mini or intensive workshop on specific topics.

Chapter 6

Summary

To recapitulate, this survey is based on school staffs' opinions on Board support for computers in education. Four target groups and seven major issues were addressed. The four target groups are:

1. elementary school principals and their grade 7 and 8 staffs;
2. secondary school principals and their Computer Studies teachers;
3. site administrators of elementary and secondary schools; and
4. supervisory officers, principals and consultative staff registered in the "Computers in Education" staff development program.

The seven issues are those related to:

- hardware;
- software;
- technical support and maintenance;
- computer use;
- site administration;
- staff development; and
- factors which restrict computer use in classrooms.

The following summary will highlight each of the seven issues.

Hardware

Quantity of Hardware

Figure 6.1 illustrates the teachers' opinions on the quantity of hardware made available to them for their programs.

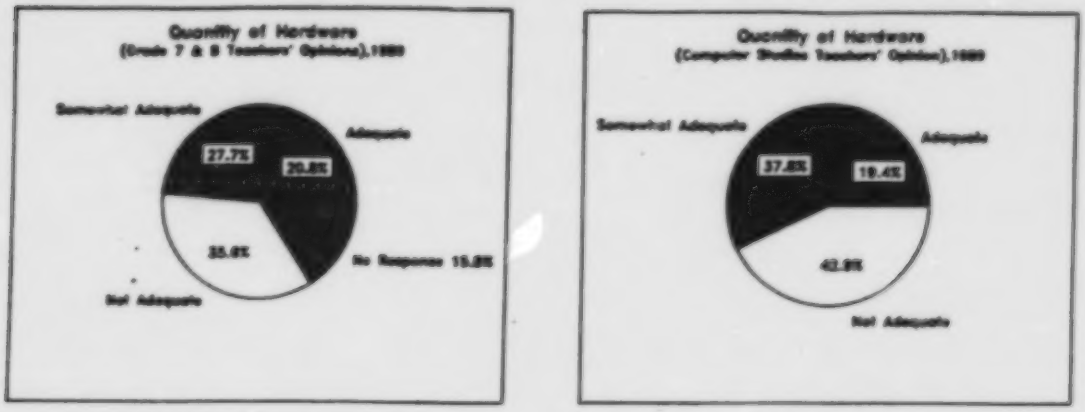

Figure 6.1: Teachers' Opinion on the Amount of Hardware

Among both grade 7 and 8 teachers and the Computer Studies teachers, only one out of five finds the quantity of hardware adequate. Computer Studies teachers, however, seem to have a stronger feeling than the grade 7 and 8 teachers about the insufficient amount of hardware; 43% of Computer Studies teachers find the quantity not adequate versus 36% of grade 7 and 8 teachers who say so. Indeed, many Computer Studies teachers mention that they would like to have one computer unit for each student in their computer labs in order to maintain the students' enthusiasm and interest in the program. In general, their school principals agree on the need for more hardware, but feel less strongly about it.

Hardware Suitability

The CCU has supported grade 7 and 8 with three computer models: ICON, IBM EDNET and Apple IIGS. Of the three models, Apple IIGS has the highest rating by both the school principals

and the teachers, while EDNET has the lowest and ICON is in between. The dissatisfaction with EDNET can be attributed to the down time associated with this networked system, the lack of user-friendliness, and the lack of suitable software.

In the Computer Studies programs in secondary schools, ICON is being used by most of the teachers. Less than 10% of the Computer Studies teachers find the model not suitable for their program. Yet some of the teachers did indicate their preference for other commercially available systems, such as IBM PC or compatibles, and Apple Mac - models which they think are more powerful, more user-friendly and have more "real-world" applications.

Computer Arrangements and Configurations

Computers in elementary schools are arranged in three basic types of setup - (i) a lab-only arrangement, (ii) a classrooms-only arrangement, and (iii) a lab-and-classrooms arrangement. The principals as a group prefer the third type of computer arrangement. Some principals specify that they would like their students to use computer labs for acquiring computer skills, and classrooms for follow-up and integration. On the other hand, the teachers as a whole do not favour one setup over the others. The majority of the teachers seem to be happy with whatever type of arrangement they have access to. What they want is to improve the conditions of their current setup by having, for example, more hardware, more time, and more technical support.

Grade 7 and 8 teachers and their principals were also asked to indicate the type of computer configurations they prefer - namely standalone or networked systems. While most principals prefer standalone computers (which they find to be more flexible and user-friendly, and to have more suitable software), the teachers' preference seems to depend on the type of computer setup they have access to. For instance, teachers who have a lab-only setup at their schools tend to prefer networked system,

while those who have a classrooms-only arrangement prefer a standalone system, and those who have access to a lab-and-classrooms arrangement are likely to opt for both computer configurations.

Software

With regard to the amount and suitability of software, the grade 7 and 8 teachers and elementary school principals are also least satisfied with the EDNET software, and are most satisfied with that of AppleIIGS. Their satisfaction level with the ICON software is in between.

As for the Computer Studies programs, the amount and suitability of software made available for the Data Processing courses have the lowest satisfaction level, as compared to the other two Computer Studies areas - Introductory Computer Studies, and Computer Science. Some teachers commented that the ICON software is inadequate for teaching Data Processing.

Technical Support

Instructional Media Services (IMS)

When teachers have problems regarding computer operations, they can turn to IMS for assistance. Among the grade 7 and 8 teachers, most contact their schools' IMS technicians, and generally they are satisfied with the service. The Computer Studies teachers mainly contact two IMS groups - IMS at 155 College Street and their schools' IMS technicians. In general, these teachers are more critical of IMS, especially the school technicians, than their elementary school counterparts. Their major criticism is that the technicians are not knowledgeable enough on the ICON system. Some Computer Studies teachers have resorted to the UNYSIS hotline for support, and virtually all are satisfied with the service.

Maintenance

Figure 6.2 shows the grade 7 and 8 teachers' and Computer Studies teachers' opinions on Maintenance service provided by the Board.

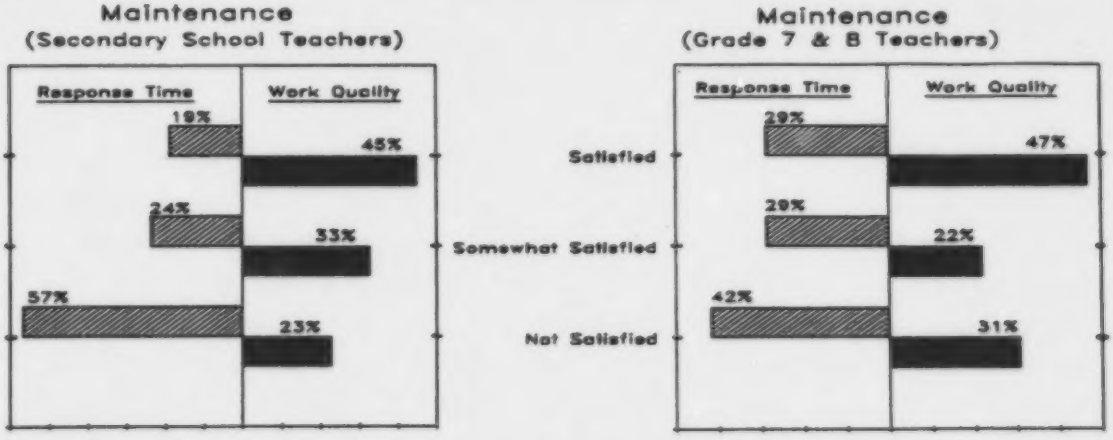

Figure 6.2: Teachers' Opinions on Maintenance Service

Both groups of teachers tend to be more satisfied with work quality than with response time.

Computer Use

Regular versus Minimal/non-users - Grade 7 & 8

Among the sample of grade 7 and 8 teachers, about 43% report using computers regularly in their programs, while the rest make little or no use of computers with their students. Below are some of the characteristics of the regular versus minimal/non-users.

Most regular users,	Most minimal/non-users,
have computers in both a lab and classrooms at their schools.	have computers in either a lab or classrooms only at their schools.
have access to standalone systems or both standalone and networked.	have access to networked alone.
are special education teachers,	are homeroom teachers,
attended all or many of the in-service sessions.	attended few or none of the in-service sessions.
find computer use having positive impact on their teaching style, and their students' learning process and creativity.	do not find computer use having any effect on their teaching style, or their students' learning process and creativity.

Cross-curricular Use - Secondary Schools

While cross-curricular use of computers has been encouraged in secondary schools, some Computer Studies teachers expressed concern about its effect on their Computer Studies programs - in terms of accessibility to the computer labs, availability of site administrators' time, and hand-holding time between themselves and the new users. Some Computer Studies teachers ask the Board to provide, for example, a second lab, more hardware, more suitable software and technical support for cross-curricular purposes.

The majority of the secondary school principals have similar concern about the schedule conflicts with Computer Studies programs. They also want more hardware for other subject areas

or a second lab for cross-curricular use. In addition to the hardware problems, many principals also mention the general inertia among subject area teachers due to the lack of knowledge, incentive and/or time. The teachers' lack of familiarity or comfort with the ICON system is also cited by some principals as an important hindrance to cross-curricular use of computers.

Site Administration

Principals' Opinions

Among the 13 elementary school principals, eight find that their site administrators have to perform technical activities that they think should be done by a technician. As for the secondary school principals, about two-thirds think that their site administrators have a heavier work load than other regular staff. While most principals have reduced the site administrators' teaching load, some mention the growing difficulty due to tight staffing. To alleviate the situation, some principals suggest the need for more technical support from the Board.

Time Required for Site Administrator Tasks

Site administrators were asked to report the amount of time required for performing their tasks during the previous year. On average, secondary school site administrators (most of whom take care of ICON computers) reported spending significantly more time on their tasks than their elementary school counterparts (who mainly look after the EDNET system). The average range of time reported by ICON site administrators was between 125 and 175 hours, while EDNET site administrators reported between 65 and 95 hours. According to an IMS representative, the time discrepancy can be attributed to the fact that the support plan for the EDNET installation was more extensive than that for the earlier installation of ICON computers.

Additional Assistance and Support for Site Administrators

Most site administrators in the survey would like the Board to provide them with some assistance, particularly in solving technical problems, and in upgrading their knowledge base. Interestingly, while more EDNET site administrators seem to ask for direct assistance from the Board (especially in system installation), more ICON site administrators report wanting Board support - for example, reducing their teaching load, offering more special seminars on new systems, and maintaining hotline services - to help them perform their tasks.

Staff Development

In this survey, grade 7 and 8 teachers and other registrants (including consultative staff, supervisory officers and school principals) were asked to comment on issues related to staff development.

Self-rated Ability

Less than 10 percent of grade 7 and 8 teachers in this survey find themselves not able to use computers in their programs. As for the other registrants, only six percent rate themselves as not being able to fulfil their particular roles with regard to curricular applications of computer technology.

Knowledge Sources

Most of grade 7 and 8 teachers claim to have gained their knowledge of computers in education from their peers and the release-time in-service programs. Indeed, most of their principals find the release-time inservice useful, especially if they could have enough supply teachers for releasing the

teachers, and if their teachers could have more hands-on practice.

Attendance in In-service Programs

Half of the grade 7 and 8 teachers reported having attended all or many of the in-service sessions. For the 45% who attended few or none of the sessions, their reasons are that some of the sessions were cancelled or run concurrently with other "professional development" activities, or that there were not enough supply teachers for release. As for the other registrants, nearly 70 percent of the responding registrants attended all or many of the sessions.

Evaluation of In-service Programs

Both grade 7 and 8 teachers and other registrants evaluate most favourably those workshops related to word processing and computer operation, and least favourably those on database management, curricular integration, and other tools (for example, spreadsheet, and telecommunications). The two common complaints from both groups are lack of hands-on time for practice, or that the topics were not covered.

Factors that Restrict Computer Use in Classrooms

In addition to their request for more hardware and software, school principals and their staff members from both elementary and secondary schools also express two other needs:

1. the need to acquire computer skills and knowledge about computers in education; and
2. the need for more time for the staff to learn, practice, and use computers with their students.

Finally, the school principals were asked to comment on the problems of relying on one key person to take a leadership role in helping other teachers with the use of computers at their schools. Interestingly, while about half of the responding secondary school principals have experienced or foresee the problem of a sudden deficit in the use of computers when the key person leaves the school, the elementary school principals do not see this as a problem at this point. Those secondary school principals who see it as a problem suggest the importance of getting more of their school staffs involved in the use of computers.

Appendix 1

Questionnaire for Grade 7 & 8 Teachers

Director
Edward N. McKeown
Associate Director - Operations
D. Bruce Snell
Associate Director - Program
Charles W. Taylor
Associate Director - Personnel
Helen I. Sissons
Comptroller of Buildings and Plant
Michael J. Rose
Comptroller of Finance
David S. Paton
Superintendent of Information Services
Linda Grayson

TORONTO BOARD OF EDUCATION

155 College Street,
Toronto, Ontario, M5T 1P6
(416) 598-4931

Computers in the Classroom Survey

Questionnaire for Teachers of Grades 7 & 8

February 1989

School: _____

Teacher: _____

This questionnaire is part of a survey of teacher opinions on their experiences with the use of computers in schools. This is not an evaluation of you or your program. The information you give will be confidential and will only be used to assess the past implementation of Board policy on computers in education, as the Board prepares to develop future plans.

To indicate your answer, circle the number beside or below the choice which best represents your response. Circle only one number for each item.

Please return your completed questionnaire to **Research Services** no later than February 28.

Your co-operation is truly appreciated.

E.W. Gordon
Superintendent - Curriculum
and
Chairman, Computer Co-ordinating Unit

COMPUTER HARDWARE

The following questions refer to those computers (ICON, EDNET and Apple IIGS) supplied by the Board between 1986 and the present.

1). Considering the use of computers to assist in the delivery of the Grade 7/8 curriculum, would you say the quantity of hardware available to you is

adequate.....1
somewhat adequate.....2
not adequate.....3

Do you think the computer model(s) you are using is suitable for your program?

	Suitable	Somewhat Suitable	Not Suitable	Not Applicable
2). ICON	1	2	3	4
3). EDNET	1	2	3	4
4). Apple IIGS	1	2	3	4

5). If you indicated "somewhat" or "not suitable", explain why.

_____

_____

6). Are you using any other model(s) of computer to support your program?

yes.....1
no.....2 [Go to Question 10.]

7). If you are, please indicate model(s) and quantity.

_____

_____

8). Have these other computers proven suitable?

yes.....1 [Go to Question 10.]
no.....2

9). If these other computers are not suitable, explain why.

_____

_____

10). Are the computers (ICONS, EDNET, or Apple IIGs) that were centrally purchased for your school presently in a lab or in individual classrooms?

a lab.....1
classrooms.....2
both.....3

(If you are using the centrally funded computers in a lab only, answer Questions 11-14 and then go to Question 19. If you are using these computers in a classroom only, go to page 3. If you are using the computers in both a lab and classrooms, answer Questions 11-18 and continue with Question 19.)

11). On average, how much time per week does your class use a lab?

less than one hour per week.....1
1 to 2 hours per week.....2
2 to 3 hours per week.....3
more than 3 hours per week.....4

12). When your class uses the lab, what is your role?

teacher of the class.....1
assistant to another (computer) teacher....2
not present.....3

13). Would you say that for your curricular needs the arrangement of computers in a lab only is

satisfactory.....1 (Skip next question.)
somewhat satisfactory.....2
not satisfactory.....3

14). If you are not entirely satisfied with a lab only arrangement, what arrangement would you recommend and why?

_____

_____

_____

[Answer Questions 15-18 if you are using centrally funded computers in your classroom.]

15). Are the computers you are presently using in your classroom networked (EDNET or ICON) or standalone (Apple IIGS)?

networked.....1
standalone.....2
both.....3

16). How many computers do you have in your classroom?

_____

17). Considering a classroom only arrangement of computers, would you say that for your curricular needs this arrangement is

satisfactory.....1 [Go Question 19.]
somewhat satisfactory.....2
not satisfactory.....3

18). If you are not entirely satisfied with a classroom only arrangement, what arrangement would you recommend and why?

_____

_____

_____

19). If you have worked with both networked (ICON or EDNET) and standalone (Apple, Pet, C-64, etc.) computers, which do you prefer to use with your class?

networked.....1
standalone.....2
both.....3
not applicable.....4 [Go to page 4.]

20). Please explain your preference.

_____

_____

_____

COMPUTER SOFTWARE

The following questions refer to ICON, EDNET and Apple IIGS software supplied by the Board for supporting your program.

How satisfied are you with the amount of software available to you? Please respond according to the type(s) of computer you are using.

		Satisfied	Somewhat Satisfied	Not Satisfied	Not Applicable
21).	ICON	1	2	3	4
22).	EDNET	1	2	3	4
23).	Apple IIGS	1	2	3	4

How suitable is the software to your curriculum? Please respond according to the type(s) of computer you are using.

		Suitable	Somewhat Suitable	Not Suitable	Not Applicable
24).	ICON	1	2	3	4
25).	EDNET	1	2	3	4
26).	Apple IIGS	1	2	3	4

27). If you answered "somewhat suitable" or "not suitable", explain why.

_____

_____

_____

28). What other types of software, if any, would you like to have access to? Please specify computer model when answering.

_____

_____

_____

TECHNICAL SUPPORT

The mandate for the Instructional Media Services (IMS) and Maintenance departments is to support the Board policy on computers in education.

I. Instructional Media Services (IMS)

During the past 12 months, approximately how often did you contact the following personnel for technical support?

		1-5 times	6-10 times	Over 10 times	Never
29).	your school's IMS technician	1	2	3	4
30).	IMS Media Centre	1	2	3	4
31).	IMS at 155 College St.	1	2	3	4
32).	Other (specify) _____	1	2	3	4

How satisfied were you with the assistance you received from the above personnel?

		Satisfied	Somewhat Satisfied	Not Satisfied	Not Applicable
33).	your school's IMS technician	1	2	3	4
34).	IMS Media Centre	1	2	3	4
35).	IMS at 155 College St.	1	2	3	4
36).	Other (specify) _____	1	2	3	4

[If you answered with 1 or 4 only in Questions 33-36, go to Question 40.]

37). If you were somewhat satisfied or not satisfied with the technical support provided by your school's IMS technician, please explain.

_____

_____

_____

38). If you were somewhat satisfied or not satisfied with the technical support provided by IMS Media Centre, please explain.

_____

_____

_____

39). If you were somewhat satisfied or not satisfied with the technical support provided by IMS at 155 College Street, please explain.

_____

_____

_____

40). On average, how long would you work on a technical problem before asking for technical assistance?

half an hour or less.....1
half an hour to two hours.....2
two to four hours.....3
more than four hours.....4

[If you are a site administrator, go to Question 43. You will be receiving an extra set of questions specially designed for site administrators.]

41). Have you performed any technical activities that you feel should have been done by a technician?

yes.....1
no.....2 (Go to Question 43.)]

42). If yes, please list these and indicate the time involved with each.

_____

_____

_____

_____

_____

_____

II. Maintenance

43). If any of your equipment required repairs during the last 12 months, how satisfied were you with the response time?

satisfied.....1
somewhat satisfied.....2
not satisfied.....3
not applicable.....4

44). How satisfied were you with the quality of repair work?

satisfied.....1
somewhat satisfied.....2
not satisfied.....3
not applicable.....4

45). What were your reasons for being not satisfied with the repair work?

_____

_____

_____

STAFF DEVELOPMENT

46). When the ICON/EDNET/Apple IIGS computers were delivered to your school, your Computer Resource Consultant offered a release time in-service program equivalent to about 10 days. How many sessions did you attend?

All (or almost all) of the sessions....1 [Skip next question.]
Many of the sessions.....2 [Skip next question.]
Few of the sessions.....3
None of the sessions.....4

47). If you responded "few" or "none" in Question 46, please explain why.

_____

_____

_____

The purpose of the in-service was to give you enough knowledge to "get started on" computer applications in the classroom. Please indicate for each of the following the degree to which the program provided you with this minimal knowledge base.

		Adequate	Somewhat Adequate	Not Adequate	Not Applicable
48).	Word Processing	1	2	3	4
49).	Database Management	1	2	3	4
50).	Other Tools (e.g. Spreadsheet, Telecommunications)	1	2	3	4
51).	Software Uses (e.g. Simulation, Problem-solving, etc.)	1	2	3	4
52).	Curricular Integration	1	2	3	4
53).	Computer Operation	1	2	3	4

54). For any of the above items circled as "not adequate", please explain.

_____

_____

_____

Through what sources have you achieved your present knowledge base on the use of computers in education?

		Yes	No
55).	Release time in-service	1	2
56).	Computers in Classroom Course	1	2
57).	Other courses	1	2
58).	Peers	1	2

59). Other (specify) _____

_____

60). Considering your present knowledge base, how do you rate your ability to use the computer as a tool for teaching/learning?

able.....1 [Go to Question 62.]
somewhat able.....2
not able.....3

61). If you circled "somewhat" or "not able", please explain how you believe the Board can best help you. Be specific indicating "what, how, when, where, by whom, etc."

_____

_____

_____

_____

62). ANY OTHER COMMENTS (re: hardware, software, technical support or staff development

_____

_____

_____

_____

_____

_____

_____

_____

Thank you for your co-operation.

Appendix 2

Interview Questions for Grade 7 & 8 Teachers

Toronto Board of Education

Computers in the Classroom Survey - Grade 7 & 8 Teachers

February 1989

Part II - Interview

This is Part II of a survey of your opinions about the use of computers in your school. This is not an evaluation of either you or your program. Your responses will be confidential and will only be used to assess the past implementation of the Board policy on computers in education, as the Board prepares to develop future plans. Please feel free to express your opinion.

1. How are you presently using the computer in your classes? (Types of applications)
[How do you assign students use of the computers? Do all your students get to use the computer at least once each week? For how long? If some students do not get to use the computer, who are they likely to be? Are there any gender differences in computer use? Are there any ability level differences in computer use?]

2. In what ways, if any, does your present use of computers enhance opportunities for student creativity?

3. In what ways, if any, has the computer changed the learning process for students?

4. In what ways, if any, has the computer altered your teaching style?

5. How would you like to be able to use the computer in your classes? What needs to be done to allow this to happen?

6. Are there any restrictive factors that have not been covered in the questionnaire or this interview that you think might have inhibited your use of computers to deliver Grade 7/8 curriculum?

THANK YOU FOR YOUR CO-OPERATION

Appendix 3

Questionnaire for Elementary School Principals

Director
Edward N. McKeown
Associate Director - Operations
D. Bruce Snell
Associate Director - Program
Charles W. Taylor
Associate Director - Personnel
Helen I. Sissons
Comptroller of Buildings and Plant
Michael J. Rose
Comptroller of Finance
David S. Paton
Superintendent of Information Services
Linda Grayson

TORONTO BOARD OF EDUCATION

155 College Street,
Toronto, Ontario, M5T 1P6
(416) 598-4931

Computers in the Classroom Survey

Questionnaire for Elementary School Principals

(Grades 7 & 8)

February 1989

School: _____

Principal: _____

This questionnaire is part of a survey of principals' opinions on their experiences with the use of computers in their school. This is not an evaluation of you or your school's program. The information you give will be confidential and will only be used to assess the past implementation of Board policy on computers in education, as the Board prepares to develop future plans.

To indicate your answer, circle the number beside or below the choice which best represents your response. Circle only one number for each item.

Please return your completed questionnaire to **Research Services** no later than February 28.

Your co-operation is truly appreciated.

E.W. Gordon
Superintendent - Curriculum
and
Chairman, Computer Co-ordinating Unit

COMPUTER HARDWARE

The following questions refer to those computers (ICON, EDNET and Apple IIGS) supplied by the Board between 1986 and the present.

1). Considering the use of computers to assist in the delivery of the Grade 7/8 curriculum, would you say the quantity of hardware provided to your school is

adequate.....1
somewhat adequate.....2
not adequate.....3

Do you think the computer model(s) provided is suitable for your school?

	Suitable	Somewhat Suitable	Not Suitable	Not Applicable
2). ICON	1	2	3	4
3). EDNET	1	2	3	4
4). Apple IIGS	1	2	3	4

5). If you think the model(s) is only "somewhat" or "not suitable", explain why.

_____

_____

_____

6). Are the computers that were centrally purchased for your school presently in a lab or in individual classrooms?

a lab.....1
classrooms.....2
both.....3

7). What would you recommend be the arrangement of computers in your school to best meet curricular needs?

in a lab only.....1
in classrooms only.....2
in some other arrangement....3 (Specify) _____

_____

8). Please explain your preference.

_____

_____

_____

9). Which do you prefer for your school, networked (ICON or EDNET) or standalone (Apple) computers?

networked.....1
standalone.....2
both.....3
not applicable.....4 [Go to page 3.]

10). Please explain your preference.

_____

_____

_____

COMPUTER SOFTWARE

The following questions refer to ICON, EDNET and Apple IIGS software supplied by the Board for supporting your school's programs.

How satisfied are you with the amount of software made available to your school? Please respond according to the type(s) of computer your school is using.

		Satisfied	Somewhat Satisfied	Not Satisfied	Not Applicable
11).	ICON	1	2	3	4
12).	EDNET	1	2	3	4
13).	Apple IIGS	1	2	3	4

How suitable would you say the software is to meet your school's curricular needs? Please respond according to the type of computers your school is using.

		Suitable	Somewhat Suitable	Not Suitable	Not Applicable
14).	ICON	1	2	3	4
15).	EDNET	1	2	3	4
16).	Apple IIGS	1	2	3	4

TECHNICAL SUPPORT

17). How satisfied are you with the technical support provided to your teachers by Instructional Media Services?

satisfied.....1 [Go to Question 19.]
somewhat satisfied.....2
not satisfied.....3
don't know.....4 [Go to Question 19.]

18). If you answered "somewhat" or "not satisfied", explain why.

_____

_____

_____

19). Do your teachers have to perform technical activities that you think should be done by a technician?

yes.....1
no.....2

20). How satisfied are you with the service provided by the Maintenance department when repairs are needed?

satisfied.....1 [Go to Question 22.]
somewhat satisfied.....2
not satisfied.....3
don't know.....4 [Go to Question 22.]

21). If you answered "somewhat" or "not satisfied", explain why.

_____

_____

_____

SITE ADMINISTRATOR

22). Do you think the site administrator in your school has a work load approximately equal to the work load of other teachers?

yes.....1 (Go to Question 24.)
no.....2

23). If no, explain what has to be done to make the work load equal.

_____

_____

_____

24). Does the site administrator have to perform technical activities you think should be done by a technician?

yes.....1
no.....2
don't know.....3

STAFF DEVELOPMENT

25). Has the release-time in-service program provided to your teachers been a useful approach in preparing them to use the computer as a teaching/learning tool?

useful.....1 [Skip next question.]
somewhat useful.....2
not useful.....3

26). If you answered "somewhat" or "not" useful, please explain.

_____

_____

_____

Thank you for your co-operation.

Appendix 4

Interview Questions for Elementary School Principals

Toronto Board of Education

Computers in the Classroom Survey

Elementary School Principals (Grades 7 & 8)

February 1989

Part II - Interview

This is Part II of a survey of your opinions about the use of computers in your school. This is <u>not</u> an evaluation of either you or your school's program. Your responses will be <u>confidential</u> and will only be used to assess the past implementation of the Board policy on computers in education, as the Board prepares to develop future plans. Please feel free to express your opinion.

1. How are the teachers in your school presently using the computer? (Types of applications)
[Do all students get to use the computer at least once each week? For how long? Are there any gender differences in computer use? Are there any ability level differences in computer use?]

2. In what ways, if any, does the present use of computers in your school enhance opportunities for student creativity?

3. In what ways, if any, has the computer changed the learning process for students?

4. In what ways, if any, has the computer altered the teaching process?

5. How would you like the teachers to be using the computer in your school? What needs to be done to allow this to happen? [Hardware?] [Staff development?]

6. In some schools one person is either officially responsible for or takes the key leadership role in helping teachers with computers. Has this been the case in your school? Some schools in this position have found that when this key person leaves the school there is a sudden deficit in the use of computers. Has this happened in your school or do you foresee that it might? What steps have you taken (or might you take) to prevent it from happening (again)?

7. Are there any restrictive factors that have not been covered in the questionnaire or this interview that you think might have inhibited your staff's use of computers to deliver Grade 7/8 curriculum?

THANK YOU FOR YOUR CO-OPERATION

Appendix 5

Questionnaire for Computer Studies Teachers

Director
Edward N. McKeown
Associate Director - Operations
D. Bruce Snell
Associate Director - Program
Charles W. Taylor
Associate Director - Personnel
Helen I. Simons
Comptroller of Buildings and Plant
Michael J. Rose
Comptroller of Finance
David S. Paton
Superintendent of Information Services
Linda Grayson

TORONTO BOARD OF EDUCATION

155 College Street,
Toronto, Ontario, M5T 1P6
(416) 598-4931

Computers in the Classroom Survey

Questionnaire for Secondary School Teachers of Computer Studies

(Introductory Computer Studies, Computer Science, Data Processing)

February 1989

School: _____

Teacher: _____

This questionnaire is part of a survey of teacher opinions on their experiences with the use of computers in schools. This is not an evaluation of you or your program. The information you give will be confidential and will only be used to assess the past implementation of Board policy on computers in education, as the Board prepares to develop future plans.

To indicate your answer, circle the number beside or below the choice which best represents your response. Circle only one number for each item.

Please return your completed questionnaire to Research Services no later than February 28.

Your co-operation is truly appreciated.

E.W. Gordon
Superintendent - Curriculum
and
Chairman, Computer Co-ordinating Unit

COMPUTER HARDWARE

The following questions refer to those computers (ICON and EDNET) supplied by the Board in 1984-85 (primarily) to support your school's programs of Computer Studies.

Have you used the following computer model(s) to teach programs of Computer Studies?

		Yes	No
1).	ICON	1	2
2).	EDNET	1	2

[If you answered yes to either of the above, please complete the whole questionnaire. If you answered no to both and are using other microcomputer model(s), answer Questions 13-16 and then go to page 5. If you are not using any microcomputer models, just put the name of your school and your name on the cover page and return the questionnaire to Research Services in the provided inter-office envelope.]

3). How many units are there in the Computer Science lab?

_____

4). Considering the use of these computers to teach programs of Computer Studies, would you say the quantity of hardware available to you is
adequate.....1 [Skip next question.]
somewhat adequate.....2
not adequate.....3

5). If you answered "somewhat adequate" or "not adequate", explain why and indicate how many more units are needed.

_____

_____

_____

Do you think the computer model(s) you are using is suitable for your program?

		Suitable	Somewhat Suitable	Not Suitable	Not Applicable
6).	ICON	1	2	3	4
7).	EDNET	1	2	3	4

8). If you indicated "somewhat" or "not suitable", explain why.

_____

_____

_____

_____

(The following question (Items 9-12) is to be answered only by those teachers using ICON computers. Other teachers should go to Question 13.)

In order to teach your program, is there a need to upgrade your existing hardware?

		Yes	No
9).	Fileserver hard disk to 64MB	1	2
10).	Workstation memory to 512K	1	2
11).	Workstation monitors to colour	1	2

12). Other (specify) _____

_____

13). Are you using any other model(s) of computer for your Computer Studies programs?

yes.....1
no.....2 (Go to page 4.)

14). If you are, please indicate model(s) and quantity.

_____

_____

_____

15). Have these other computers proven suitable?

Yes.....1 (Go to page 4.)
No.....2

16). If these other computers are not suitable, explain why.

_____

_____

COMPUTER SOFTWARE

The following questions refer to ICON and EDNET software supplied by the Board to support programs of Computer Studies.

Would you say the amount of software made available for your program of Computer Studies is:

		Adequate	Somewhat Adequate	Not Adequate	Not Applicable
17).	Introductory Computer Studies	1	2	3	4
18).	Computer Science	1	2	3	4
19).	Data Processing	1	2	3	4

Judging the suitability of the software made available to you, would you say that:

		Most is suitable	Some is suitable	Little is suitable	None is suitable	Not Applicable
20).	Introductory Computer Studies	1	2	3	4	5
21).	Computer Science	1	2	3	4	5
22).	Data Processing	1	2	3	4	5

(If you answered with "1" or "2" only in Items 20-22, go to page 5.)

23). If you answered "little" or "none" in Items 20-22, explain why. Please specify the course.

_____

_____

_____

_____

TECHNICAL SUPPORT

The mandate for the Instructional Media Services and Maintenance departments is to support the Board policies on computers in education.

I. Instructional Media Services (IMS)

During the past 12 months, approximately how often did you contact the following personnel for technical support?

		1-5 times	6-10 times	Over 10 times	Never
24).	your school's IMS technicians	1	2	3	4
25).	IMS Media Centre	1	2	3	4
26).	IMS at 155 College St.	1	2	3	4
27).	Other (specify) _____	1	2	3	4

How satisfied were you with the assistance you received from the above personnel?

		Satisfied	Somewhat Satisfied	Not Satisfied	Not Applicable
28).	your school's IMS technicians	1	2	3	4
29).	IMS Media Centre	1	2	3	4
30).	IMS at 155 College St.	1	2	3	4
31).	Other (specify) _____	1	2	3	4

(If you answered with 1 or 4 only in Items 28-31, go to Question 35.)

32). If you were somewhat satisfied or not satisfied with the technical support provided by your school's IMS technician, please explain.

_____

_____

_____

33). If you were somewhat satisfied or not satisfied with the technical support provided by IMS Media Centre, please explain.

_____

_____

_____

34). If you were somewhat satisfied or not satisfied with the technical support provided by IMS at 155 College Street, please explain.

_____

_____

_____

35). On average, how long would you work on a technical problem before asking for technical assistance?

half an hour or less.....1
half an hour to two hours.....2
two to four hours.....3
more than four hours.....4

(If you are a site administrator, go to page 7. You will be receiving an extra set of questions specially designed for site administrators.)

36). Have you performed any technical activities that you feel should have been done by a technician?

Yes.....1
No.....2 (Go to page 7.)

37). If yes, please list these technical activities and indicate the time involved with each.

_____

_____

_____

_____

II. Maintenance

38). If any of your equipment required repairs during the last 12 months, how satisfied were you with the response time?

satisfied.....1
somewhat satisfied.....2
not satisfied.....3
not applicable.....4

39). How satisfied were you with the quality of repair work?

satisfied.....1
somewhat satisfied.....2
not satisfied.....3
not applicable.....4

40). What were your reasons for being not satisfied with the repair work?

_____

_____

_____

GENERAL ISSUES

41). Are there any other restrictive factors, in addition to those already covered in this questionnaire, that you think might have inhibited your delivery of Computer Studies programs?

_____

_____

_____

_____

_____

_____

_____

_____

42). ANY OTHER COMMENTS:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Thank you for your co-operation.

Appendix 6

Questionnaire for Secondary School Principals

Director
Edward N. McKeown
Associate Director - Operations
D. Bruce Snell
Associate Director - Program
Charles W. Taylor
Associate Director - Personnel
Helen I. Simons
Comptroller of Buildings and Plant
Michael J. Bunn
Comptroller of Finance
David S. Paton
Superintendent of Information Services
Linda Grayson

TORONTO BOARD OF EDUCATION

155 College Street,
Toronto, Ontario, M5T 1P6
(416) 598-4931

Computers in the Classroom Survey

Questionnaire for Secondary School Principals

February 1989

School: _____

Principal: _____

This questionnaire is part of a survey of principals' opinions about the use of computers in secondary schools. This is not an evaluation of you or your school's program. The information you give will be confidential and will only be used to assess the past implementation of Board policy on computers in education, as the Board prepares to develop future plans.

Please complete this questionnaire and return it to Research Services no later than February 28.

Your co-operation is truly appreciated.

E.W. Gordon
Superintendent - Curriculum
and
Chairman, Computer Co-ordinating Unit

BACKGROUND

The Board's policy, Learning with Computers: The Next Few Years, was adopted in August 1985. It indicated that for 1985 and 1986 the priority was to place into secondary schools adequate hardware and software to teach programs of Computer Studies (Introductory Computer Studies, Computer Science and Data Processing). It was expected that stabilizing or declining enrolments in these programs would enable the computer labs to be used by teachers of other courses (English, Geography, etc). Then for the period 1987 to 1989 the Board's priority was to place computers into schools with Grade 7/8 students.

With this in mind, please answer the attached six open-ended questions. (Use the back of any page if necessary.)

1. Do you think the Computer Studies program in your school has been adequately supported by the Board in terms of hardware, software, technical support and maintenance service?

2. To what extent has your ICON and/or EDNET computer lab(s) been used for cross-curricular purposes (e.g. by teachers of English, Geography, etc.)? State in <u>priority</u> order any hindrances to doing this.

3. What difficulties have your staff encountered in meeting the computer skill level of students who are entering from elementary school? Please prioritize these problem areas.

4. In some schools one person is either officially responsible for, or takes the key leadership role in, helping teachers with computers. Has this been the case in your school? Some schools in this position have found that when this key person leaves the school, there is a sudden deficit in the use of computers. Has this happened in your school or do you foresee that it might happen? What steps have you taken (or might you take) to prevent it from happening (again)?

5. Do you think the site administrator in your school has a work load approximately equal to the work load of other teachers? If no, explain what has to be done to make the work load equal.

6. Are there any other restrictive factors, in addition to those already covered in this questionnaire, that you think might have inhibited the application of computer technology in your school (e.g. Computer Studies and cross-curricular purposes)?

THANK YOU FOR YOUR CO-OPERATION.

Appendix 7

First Questionnaire for Site Administrators

Director
Edward N. McKeown
Associate Director - Operations
D. Bruce Snell
Associate Director - Program
Charles W. Taylor
Associate Director - Personnel
Helen I. Sissons
Comptroller of Buildings and Plant
Michael J. Rose
Comptroller of Finance
David S. Paton
Superintendent of Information Services
Linda Grayson

TORONTO BOARD OF EDUCATION

155 College Street,
Toronto, Ontario, M5T 1P6
(416) 598-4931

February, 1989

TO: SITE ADMINISTRATOR

SCHOOL: _____

RE: SITE ADMINISTRATION FOR THE ICON SYSTEM

In late June, 1988 you were sent from Russ Wilkinson, Computer Resource Consultant - Secondary, a questionnaire titled "ICON Site Administrators Survey". You were good enough to take the time to complete the survey form and the results for your school are included in the attached summary. (Your school is identified as _____ on the survey results sheet.)

Your knowledge base may now be sounder for supplying this type of data, and we are offering you the opportunity to update this information should you wish. A new copy of the June questionnaire is included for this purpose. In addition we would like you to supply us with answers to two new questions related to your role as Site Administrator.

The information provided by you will form part of an assessment of the past implementation of the Board's policy on computers in education, as the Board prepares to develop future plans.

Please return your completed forms to **Research Services** no later than February 28, 1989.

Your co-operation is truly appreciated.

E. W. Gordon,
Superintendent - Curriculum
and
Chairman,
Computer Co-ordinating Unit

EWG:bc
ATT.

SITE ADMINISTRATORS' QUESTIONNAIRE

1. What technical activities, if any, that you perform as a Site Administrator require additional assistance or support?

2. In what ways do you recommend the Board provide this required support?

Thank you for your co-operation.

SCHOOL _____ SITE ADMINISTRATOR _____

ICON

Site Administrators SURVEY

Based on your experience of managing the ICON network please indicate the amount of time you spend installing the system, cleaning up the system, maintaining the system, providing classroom teacher support, and performing other required tasks.

If you have been keeping track of your time please enter the total time you spend each year on each of these main activities in the space beside each of the headings.

OR

If you need to estimate the time you spend on these activities you may wish to use boxes provided to the right of each sub-activity.

- In the leftmost box indicate the average number of hours you spend each time you perform the task.
- If you have the assistance of a student helper or classroom teacher in completing a task, please indicate the amount of time they spend in the second box and the amount of time you spend supervising/teaching/helping them in the first box.
- In the rightmost box estimate the number of times the task is completed in your school during the year.

	# HRS. REQUIRED TO PERFORM TASK YOURS	# HRS. REQUIRED TO PERFORM TASK OTHERS	# OF TIMES A YEAR
SYSTEM INSTALLATION = _____ Total Hrs./Year			
· Major installations of new operating systems (including installing QNX/Ambience/DOS, utility programs, programming lang. configuring printers and learning new system commands functions and problems.	☐	☐	☐
· Installations of updates and minor operating system software.	☐	☐	☐
· Add general teacher and login codes.	☐	☐	☐
· Setup hardware after it has been stored or moved.	☐	☐	☐
SYSTEM CLEANUP = _____ Total Hrs./Year			
· Remove login codes and directories for most users.	☐	☐	☐
· Pack up hardware for security storage or moving.	☐	☐	☐

	# HRS. REQUIRED TO PERFORM TASK ONCE YOURS	# HRS. REQUIRED TO PERFORM TASK ONCE OTHERS	# OF TIMES A YEAR
SYSTEM MAINTENANCE = _____ Total Hrs./Year			
· Order, unpack, store ans install consummables such as paper and printer ribbons.			
· Troubleshoot the system.			
· Perform simple repairs or arrange for work order (or warranty) repairs including packing, shipping, installing, and testing the hardware.			
· Backup files for archival purposes.			
CLASSROOM TEACHER SUPPORT = _____ Total Hrs./Year			
· Add curriculum specific software and student login codes for a classroom teacher.			
· Train and support for classroom teachers using the ICON computers.			
· Removing software and student files no longer needed.			
· Recording Lab bookings by other teachers.			
OTHER TASKS = _____ Total Hrs./Year			
· Performing the Board's inventory check.			
· Cataloging and storing system software and its documentation.			
Any other tasks that requires your time in maintaining the system (please fill in the details below).			
· _____			
· _____			

Thank you for your co-operation.

Director
Edward N. McKeown
Associate Director - Operations
D. Bruce Snell
Associate Director - Program
Charles W. Taylor
Associate Director - Personnel
Helen I. Simmons
Comptroller of Buildings and Plant
Michael J. Rose
Comptroller of Finance
David S. Paton
Superintendent of Information Services
Linda Grayson

TORONTO BOARD OF EDUCATION

155 College Street,
Toronto, Ontario. M5T 1P6
(416) 598-4931

February, 1980

TO: SITE ADMINISTRATOR

SCHOOL: _____

RE: SITE ADMINISTRATION FOR THE EDNET SYSTEM

All of the ICON Site Administrators, secondary and elementary, have co-operated in the completion of a survey form related to their tasks in the operation of these systems. It is important that we gather identical data for the EDNET systems.

Attached are two forms. One asks for answers to two open-ended questions. The other asks you to estimate the hours that you spend on different tasks as Site Administrator. We recognize that these must be estimates.

The information provided by you will form part of an assessment of the past implementation of the Board's policy on Computers in Education, as the Board prepares to develop future plans.

Please return the completed forms to **Research Services** no later than February 28, 1980.

Your co-operation is truly appreciated.

E. W. Gordon,
Superintendent - Curriculum
and
Chairman,
Computer Co-ordinating Unit

EWG:bc

SITE ADMINISTRATORS' QUESTIONNAIRE

1. What technical activities, if any, that you perform as a Site Administrator require additional assistance or support?

2. In what ways do you recommend the Board provide this required support?

Thank you for your co-operation.

SCHOOL_____ SITE ADMINISTRATOR_____

EDNET

Site Administrators SURVEY

Based on your experience of managing the EDNET network please indicate the amount of time you spend installing the system, cleaning up the system, maintaining the system, providing classroom teacher support, and performing other required tasks.

If you have been keeping track of your time please enter the total time you spend each year on each of these main activities in the space beside each of the headings.

OR

If you need to estimate the time you spend on these activities you may wish to use boxes provided to the right of each sub-activity.

- In the leftmost box indicate the average number of hours you spend each time you perform the task.
- If you have the assistance of a student helper or classroom teacher in completing a task, please indicate the amount of time they spend in the second box and the amount of time you spend supervising/teaching/helping them in the first box.
- In the rightmost box estimate the number of times the task is completed in your school during the year.

	# HRS. REQUIRED TO PERFORM TASK YOURS	# HRS. REQUIRED TO PERFORM TASK OTHERS	# OF TIMES A YEAR
SYSTEM INSTALLATION = _____ Total Hrs./Year			
· Installations of PORT, AMBIENCE, TBF 88, Configuring printers and learning new system commands functions and problems, etc.			
· Installations of delivery disks.			
· Add general teacher and login codes.			
· Setup hardware after it has been stored or moved.			
SYSTEM CLEANUP = _____ Total Hrs./Year			
· Remove login codes and directories for non users.			
· Pack up hardware for security storage or moving.			

	# HRS. REQUIRED TO PERFORM TASK ONCE: YOURS	OTHERS	# OF TIMES A YEAR
SYSTEM MAINTENANCE = _____ Total Hrs./Year			
- Order, unpack, store ans install consummables such as paper and printer ribbons.	☐	☐	☐
- Troubleshoot the system.	☐	☐	☐
- Perform simple repairs or arrange for work order (or warranty) repairs including packing, shipping, installing, and testing the hardware.	☐	☐	☐
- Backup files for archival purposes.	☐	☐	☐
CLASSROOM TEACHER SUPPORT = _____ Total Hrs./Year			
- Add curriculum specific software and student login codes for a classroom teacher.	☐	☐	☐
- Train and support for classroom teachers using the EDNET computers.	☐	☐	☐
- Removing software and student files no longer needed.	☐	☐	☐
- Recording Lab bookings by other teachers.	☐	☐	☐
OTHER TASKS = _____ Total Hrs./Year			
- Performing the Board's inventory check.	☐	☐	☐
- Cataloging and storing system software and its documentation.	☐	☐	☐
Any other tasks that requires your time in maintaining the system (please fill in the details below).	☐	☐	☐
- _____	☐	☐	☐
- _____	☐	☐	☐

Thank you for your co-operation.

Appendix 8

Second Questionnaire for Site Administrators

TO:_____ SCHOOL:_____
(Site Administrator)

1. The following recommendations were made by site administrators at 30 schools. Please indicate how important you think the following support will be to you or to your school. (Use the following scale of 1 to 5, and circle <u>one</u> number for each item.)

   - o "1" - very important
   - o "2" - important
   - o "3" - somewhat important
   - o "4" - not very important
   - o "5" - not important)

SITE ADMINISTRATOR RECOMMENDATIONS FOR SUPPORT	
On site technicians for schools	1 2 3 4 5
Better qualified technicians	1 2 3 4 5
Provide prompt service	1 2 3 4 5
Provide equipment loans during repair period	1 2 3 4 5
Install phones in the labs.	1 2 3 4 5
Have subject consultants introduce software appopriate to their curriculum area	1 2 3 4 5
Have a software library in the school library	1 2 3 4 5
Support "hotlines"	1 2 3 4 5
Provide site administrator seminars for new systems	1 2 3 4 5
Arrange caretaking assistance for hardware	1 2 3 4 5
Reduce course load for site administrators	1 2 3 4 5
Provide more access to technical assistance	1 2 3 4 5
Monitor new system releases (debug before sending)	1 2 3 4 5
Create technical teams (technician and consultant)	1 2 3 4 5
For each type of computer system standardize the systems	1 2 3 4 5
Provide funds for technical assistance (i.e. co-op student)	1 2 3 4 5
Provide handbook of error messages	1 2 3 4 5
Provide user friendly equipment	1 2 3 4 5
Give support to system programmers	1 2 3 4 5
Provide more consultants	1 2 3 4 5
Improve communication	1 2 3 4 5
Other (Please specify)	1 2 3 4 5

2. The site administrators also reported in the first questionniare some of the activities they think requiring assistance. In each of the following activities, please indicate how much additional assistance or support you need. (Use the following scale of 1 to 4, and circle one number for each item.)

- o "1" - need a lot of assistance or support
- o "2" - need some assistance or support
- o "3" - need a little assistance or support
- o "4" - need no assistance or support

SITE ADMINISTRATOR ACTIVITIES REQUIRING ASSISTANCE	
Hardware installation	1 2 3 4
Installing/upgrading operating system	1 2 3 4
Configuring new software programs	1 2 3 4
Learning the system	1 2 3 4
Dismantling and connecting work stations before and after repairs	1 2 3 4
Checking and maintaining hardware	1 2 3 4
Cleaning disk space	1 2 3 4
Back-up	1 2 3 4
Troubleshooting and/or debugging technical problems	1 2 3 4
Elicit repairs/correction of system breakdowns	1 2 3 4
Cleaning screens and keyboards	1 2 3 4
Inservice to teachers	1 2 3 4
Disseminating software and information re: software	1 2 3 4
Helping other teachers with technical problems	1 2 3 4
Other (Please specify)	1 2 3 4

3. How frequent are the ICON/EDNET computers being used at your school each week? If you think the computers are <u>not</u> frequently used, please explain why.

_____

_____

_____

_____

_____

_____

_____

_____

_____

THANK YOU FOR YOUR CO-OPERATION

Appendix 9

Questionnaire for Registrants in "Computers in Education" Staff Development Program

Director
Edward N. McKeown
Associate Director - Operations
D. Bruce Snell
Associate Director - Program
Charles W. Taylor
Associate Director - Personnel
Helen I. Simmons
Comptroller of Buildings and Plant
Michael J. Rose
Comptroller of Finance
David S. Paton
Superintendent of Information Services
Linda Grayson

TORONTO BOARD OF EDUCATION

155 College Street,
Toronto, Ontario, M5T 1P6
(416) 596-4931

February, 1989

SURVEY OF REGISTRANTS IN THE COMPUTERS IN EDUCATION STAFF DEVELOPMENT PROGRAM

1986-1989

(Supervisory Officers, Principals/Vice-Principals, Co-ordinators/ Consultants)

SITE: _____

NAME: _____

POSITION: _____

This questionnaire is part of a survey being undertaken to assess the past implementation of the Board's policy on computers in the classroom, as the Board prepares to develop future plans.

The information will not be used as an evaluation of you, and it will be kept confidential.

Please circle the number beside or below the choice that best represents your response. Circle only one number for each item.

Please return the questionnaire to **Research Services** no later than February 28, 1989.

Your co-operation is truly appreciated.

E. W. Gordon,
Superintendent - Curriculum
and
Chairman,
Computer Co-ordinating Unit.

EWG:bc

PART I

1. The Computer Resources Department has your name listed as a "registrant" in one of its Computers in Education Staff Development Programs (over 35 hours of sessions) held at the Lakeview Secondary School computer lab during the period 1986 to 1989. How many sessions did you attend?

   All (or almost all) of the sessions?.....1 (Go to Question 3)

   Many of the sessions?.....2 (Go to Question 3)

   Few of the sessions?.....3

   None of the sessions?.....4

2. If you responded "few" or "none" above, please explain.

   _____

   _____

   _____

   _____

3. Do you plan to register in another of these programs in the future?

   YES.....1 (Go to Question 5)

   NO.....2

4. If "no" please explain._____

   _____

   _____

   _____

   (Please go to Question 20)

PART II

N.B. To be completed only by those who indicated "all" or "many" in Question 1.

The purpose of the staff development program was to provide participants with a general awareness of the various curricular applications of computers in the classroom. ("Expertise" was not a goal in such a short program). Please indicate for each of the themes below the degree to which the program succeeded in its attempt to provide a general awareness.

	Adequate	Somewhat Adequate	Not Adequate	Not Applicable
5. Word Processing	1	2	3	4
6. Database Management	1	2	3	4
7. Other Tools (Telecommunications, Spreadsheets)	1	2	3	4
8. Software Uses (Simulations, Problem Solving, etc.)	1	2	3	4
9. Curricular Integration	1	2	3	4
10. Computer Operation	1	2	3	4

11. Please explain for any items circled as "not adequate." _____

_____

_____

_____

_____

As a result of this staff development program are you in a better position to -

	Much Better	Somewhat Better	Not At All
12. understand literature related to computers in education/talk to others more easily about computers in education/etc?	1	2	3
13. offer advice and support to others in the school system?	1	2	3

Since you have completed the staff development program, have you engaged in any of the following activities to improve your understanding of computers in education? (If you are in the 1988-89 program, omit this question and go to Question 20.)

	YES	NO
14. Enrolled in some other course/ program. Please specify _____	1	2
15. Acquired a computer (home or office)	1	2
16. Dialogued with people knowledgeable about computers with the goal of improving your knowledge	1	2
17. Read journals/books etc. related to computers in education	1	2
18. Attended a computer conference	1	2

19. Other (please specify) _____

_____

_____

_____

_____

_____

PART III

20. Considering your present knowledge related to the curricular applications of computer technology, how do you rate your ability to fulfill your particular role and responsibilities in the school system?

    Able.....1

    Somewhat Able....2

    Not Able.....3

21. If you circled "somewhat" or "not" able, please explain how you believe the Board could best help you fulfill your role. Be specific indicating "what, how, when, where, by whom, etc."

    _____

    _____

    _____

    _____

    _____

    This questionnaire has focussed on the curricular uses of computers and your role in supporting these curricular applications. You may also have needs for "administrative" applications which the staff development program was not intended to address.

22. "Are there any administrative/professional uses of the computer that you would like to adopt"

    Yes.....1

    No.....2

23. Assuming that you could access appropriate hardware and software, would you need "in-service" related to these uses?

    Yes.....1

    No.....2

24. If you answered "yes", please explain how the Board could best assist you. Be specific indicating "what, how, when, where, by whom, etc.".

    _____

    _____

    _____

    _____

Thank you for your co-operation in completing this questionnaire.

Appendix 10

Specific Comments and Suggestions Made by Grade 7 & 8 Teachers

During the interview teachers added other comments about computer use and made specific suggestions on how to help them. Teacher concerns and suggestions fall into the four areas listed below.

Hardware: 1) teachers said there is computer equipment lying about unused in some of the schools, some of which probably could be used in other schools. An inventory of all equipment should be made to identify and then redistribute equipment; 2) each school should have a central pool of equipment which teachers could sign up to use; 3) make computers available to teachers to take home, especially during winter, spring and summer breaks; 4) teachers should have access to a modem in order to exchange ideas and information with other teachers; 5) the laptops provided to special students should be compatible with other computers in special education classes.

Software: 1) have a "software fair" displaying various software programs that are available, with consultants and teachers to provide information on applications; 2) circulate a "software review" which includes a critique of various software packages; 3) there is a definate shortage of software in the areas of physical education, guidance and industrial arts and "learning disabled" students require short, easy-to-read programs which provide immediate feedback; 4) students would benefit from software which promotes lateral thinking; 5) teachers would like to have a central software supply for each school, perhaps located in the school library.

Skills Development: 1) a number of people identified a need to provide computer training to students which can be more easily transferred to systems operating in the "real world"; 2) a "computer immersion" program for students, a concentrated computer program held in a central location for a specified block of time; 3) sabbaticals for teachers interested in doing intensive computer studies; 4) arrange for teachers to visit "model" schools or classes to see how to use and integrate computers properly.

Services: 1) provide teachers with information regarding Board policy on the use of computers in the schools and who to contact when something goes wrong; 2) provide user manuals for students, an error message manual for site administrators and teachers and operating charts for classrooms; 3) develop a comprehensive plan for the use of computers for the whole school system; 4) make a separate line in each school budget for computer and software supplies (rather than for each class); 5) assist teachers who want to purchase their own computers; 6) computerize libraries to keep records on resources and to access data bases for student research; 7) improve security measures for computers, possibly by building computers into the walls so they could be locked at night; 8) it would be useful to have a technical person on-call who could repair units on site.

Appendix 11

Site Administrators' Activities that Require Additional Assistance

Technical Activities	Amount of Assistance Require: A lot	Some	A little	None	
1. Troubleshooting and/or debugging technical problems	59%	31%	9%	-	PROBLEM-SOLVING
2. Elicit repairs/correction of system breakdowns	50%	38%	9%	-	
3. Hardware installation	22%	41%	28%	6%	
4. Installing/upgrading operating system	19%	69%	6%	6%	SYSTEM
5. Configuring new software programs	25%	63%	9%	3%	INSTALLATION
6. Dismantling and connecting work stations before and after repairs	13%	28%	34%	25%	
7. Checking and maintaining hardware	6%	44%	44%	6%	
8. Back-up	19%	41%	16%	22%	SYSTEM
9. Cleaning disk space	19%	28%	28%	22%	MAINTENANCE
10. Cleaning screens and keyboards	19%	22%	22%	34%	
11. Learning the system	34%	47%	13%	3%	
12. Disseminating software and information re: software	31%	38%	31%	-	INFORMATION
13. Helping other teachers with technical problems	22%	63%	12%	3%	TEACHER
14. Inservice to teachers	25%	59%	13%	3%	SUPPORT

Appendix 11

Site Administrators' Activities that Require Additional Assistance

Technical Activities	Amount of Assistance Require: A lot	Some	A little	None	
1. Troubleshooting and/or debugging technical problems	59%	31%	9%	-	PROBLEM-SOLVING
2. Elicit repairs/correction of system breakdowns	50%	38%	9%	-	
3. Hardware installation	22%	41%	28%	6%	
4. Installing/upgrading operating system	19%	69%	6%	6%	SYSTEM INSTALLATION
5. Configuring new software programs	25%	63%	9%	3%	
6. Dismantling and connecting work stations before and after repairs	13%	28%	34%	25%	
7. Checking and maintaining hardware	6%	44%	44%	6%	
8. Back-up	19%	41%	16%	22%	SYSTEM MAINTENANCE
9. Cleaning disk space	19%	28%	28%	22%	
10. Cleaning screens and keyboards	19%	22%	22%	34%	
11. Learning the system	34%	47%	13%	3%	
12. Disseminating software and information re: software	31%	38%	31%	-	INFORMATION
13. Helping other teachers with technical problems	22%	63%	12%	3%	TEACHER
14. Inservice to teachers	25%	59%	13%	3%	SUPPORT

Appendix 12

Types of Board Support Site Administrators Desire

Board Support	Very Important	Important	Somewhat Important	Not Very Important	Not Important
1. Provide site administrator seminars for new systems	84%	13%	3%	-	-
2. Reduce course load for site administrators	66%	25%	6%	-	-
3. Better qualified technicians	45%	39%	13%	3%	-
4. On site technicians for schools	29%	16%	26%	23%	6%
5. Have subject consultants introduce software appropriate to their curriculum area	34%	44%	19%	3%	-
6. Provide more consultants	25%	34%	13%	13%	13%
7. Create technical teams (technician and consultant)	22%	44%	25%	3%	3%
8. Provide funds for technical assistance (i.e. co-op student)	19%	44%	28%	6%	3%
9. Arrange caretaking assistance for hardware	13%	47%	16%	9%	6%
10. Support "hotlines"	66%	31%	-	-	-
11. Monitor new system releases (debug before sending)	63%	25%	9%	-	-
12. Provide handbook of error messages	47%	19%	19%	16%	-
13. Install phones in the labs	47%	25%	6%	19%	3%
14. For each type of computer system standardize the systems	31%	34%	6%	16%	3%
15. Provide user friendly equipment	38%	28%	22%	6%	3%
16. Provide equipment loans during repair period	34%	25%	38%	3%	-
17. Provide prompt service	88%	12%	-	-	-
18. Improve communication	44%	34%	16%	3%	3%
19. Provide more access to technical assistance	34%	53%	6%	-	-
20. Have a software library in the school library	16%	19%	47%	12%	6%
21. Give support to system programmers	9%	41%	34%	-	3%